

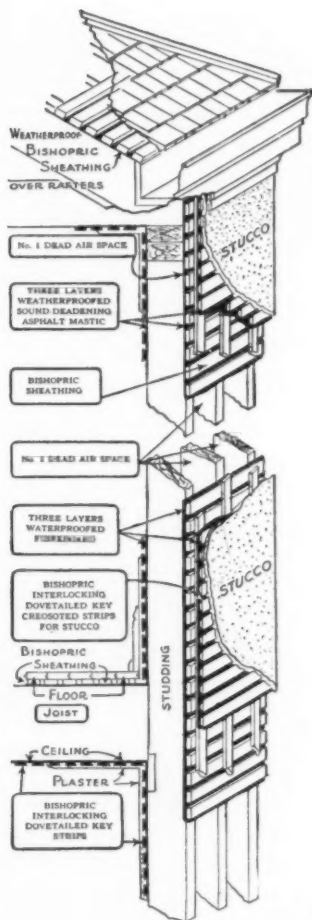
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THE ARCHITECTURAL RECORD



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SHOW WINDOW, 618 FIFTH AVENUE, NEW YORK. McKIM, MEAD & WHITE, ARCHITECTS.

THE ARCHITECTURAL RECORD

VOLUME XLIX



NUMBER VI

JUNE, 1921

The Newer Fifth Avenue Retail Shop Fronts

An American Contribution to Modern Art

By John Taylor Boyd, Jr.

THE small shop front is gaining a place for itself in American architecture. By perfecting its type the architect has made an important advance in the broad field of small modern commercial architecture, which has hitherto resisted efforts to improve it.

The huge industrial cities which the nineteenth century has bequeathed to us have not been favorable settings for architecture. Ugly, chaotic through too swift growth, disorganized and too confused to be understood, they have not yet acquired a definite architectural form. Before they can have a characteristic architecture they must first perfect their social structure and develop a background of tradition established in familiar cus-

toms and manners. What the modern city needs is a comprehensive social ideal. Such an ideal can only take practical shape in city planning. For this reason, city architecture in its highest development means city planning.

Besides the fact of chaotic growth another obstacle impedes the proper organization of a city—one not generally realized. This is, that Anglo-Saxons, like other peoples of North European origin, are essentially a small town people. Throughout their history up to the nineteenth century they have had slight experience in cities; even their largest centers, as, for example, London, are overgrown towns or collections of towns. Because of this rural environment our whole civil-

ization—customs, manners, ways of thinking, our culture, our legal and social organization—expresses a town-and-country ideal. Modern industrialism came to us in the nineteenth century and drew us into cities, where we dwell amid a complexity and confusion never before known. Is it strange that we find difficulty in making the change?

We may think that this difficulty is world wide, but indeed it is confined to ourselves and to the other two most highly industrialized nations—Britain and Germany. The Latins are much better off. We have nothing to correspond with the splendid city tradition of the Latin races. The Latins have always been a people accustomed to dwell in cities. Even in ancient times they perfected a society adapted to city needs, and elevated the conception of city life into one of the magnificent ideals of the human race. Compare London and Liverpool and Berlin and Hamburg and New York and Chicago—those congested, formless growths whose only satisfactory districts are, as one might expect, small town parts, the suburbs and residence districts—compare these with that brilliant procession of cities of the Latin tradition: Athens, Imperial Rome, Constantinople of the Eastern Empire, Venice, and, in the Renaissance, Florence, Genoa, Rome and Venice again, and, today, Paris. What a splendid tradition! If one eliminated all that the Latin city has contributed to civilization—in social organization, law, government, science, the humanities, manners, letters, art—what would be left? There is much in the world that is fine which is not comprised in the small town society of the Anglo-Saxons.

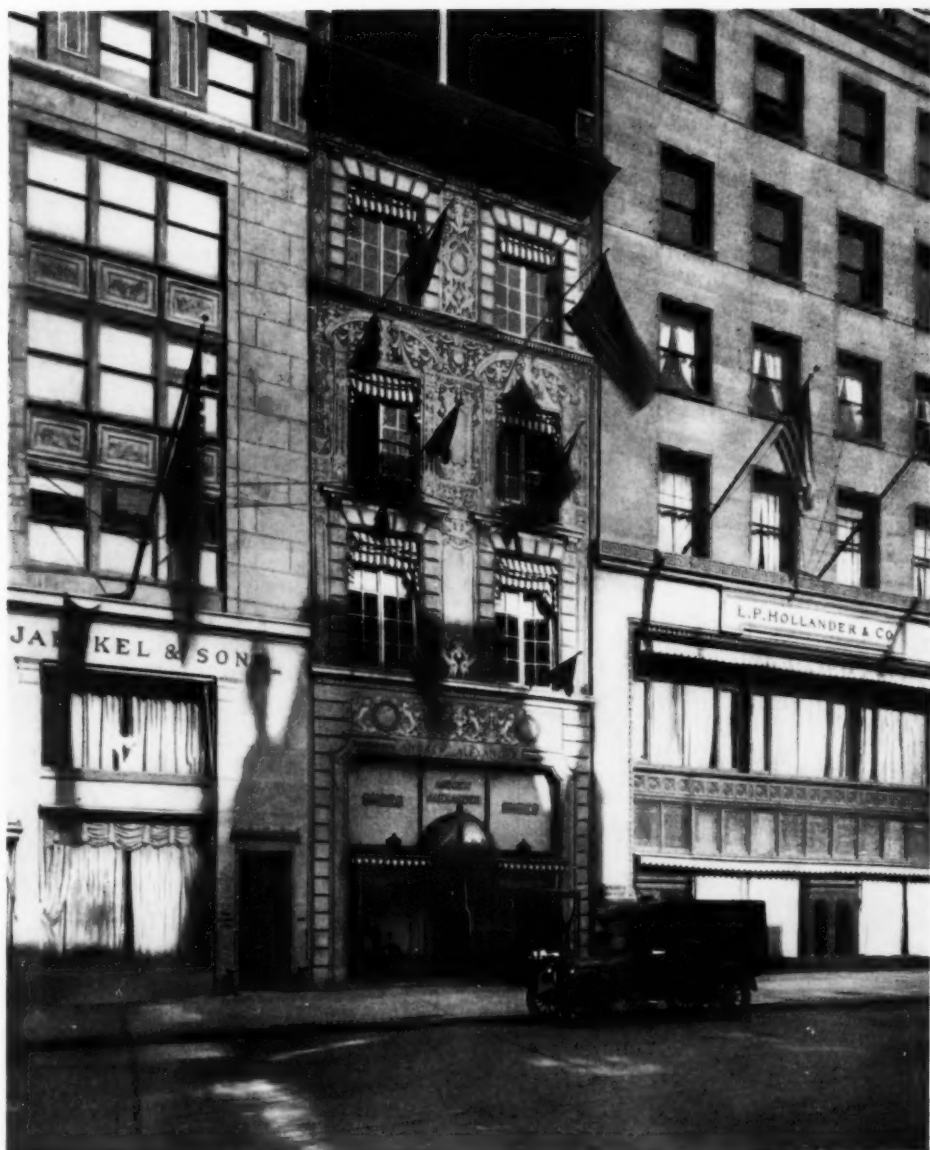
Hence there is a vital need that we Americans appreciate the Latin tradition of city life. It will hardly do for us to ignore it, thinking that it no longer suits the times. The opposite is true, because never did its clear perception appear so necessary as in the present confusion of the industrial city. In Paris the Latin ideals are as vital as ever. Although the most devastating war in her history is just over, Paris sees that the Haussmann city plan of the Third Empire no longer

meets conditions and she is studying her plan anew, and including in her city area the district around Paris in a comprehensive scheme which for vastness of scale and in thoroughness of conception surpasses anything ever before attempted. She is able to do this because all her citizens grasp clearly the Latin city ideal and know its social and economic value.

City planning seems far afield from the subject of shop fronts, yet its place in city architecture should be understood in order to appreciate a new development in city architecture. Shop fronts become more significant, I think, if we realize that just such modest features are most suited to American designs with their small town traditions. Our architects easily grasp the intimate domestic scale of the shop front, and they instinctively invest its design with a free, bold originality, a directness, a vividness—a native twang—that they do not always attain in more grandiose structures. Because of this the shop front becomes a characteristic American feature. It is a real contribution on the part of the American architect to modern art.

In creating this conception, the architect begins at the bottom of city architecture, while before he has worked chiefly at the top. Hitherto the more grandiose buildings have held his attention, and more recently city planning. In this vaster field he has sought inspiration in the Latin ideal as he has sensed it in the architecture and in the city planning of old Rome and of modern Paris. Paris has contributed to his training in the fine teachings of the *Ecole des Beaux Arts*, for the French system of flexible planning—which is but the eternal principles of architecture applied to modern conditions—lies at the basis of all modern planning. Other peoples may have brought certain types of structures to a higher point of specialization, but the French furnished the key to the process. Here, again, is but another illustration of the value of the Latin city tradition in the twentieth century.

However, French teaching cannot do everything in architecture. It cannot teach Americans architectural style.



SHOE SHOP, 548 FIFTH AVENUE, NEW YORK. CARRÈRE & HASTINGS, ARCHITECTS.

Style they must learn for themselves, starting with small beginnings like these small store fronts. This type of work comes naturally to them, and hence it is not altogether surprising that, in the space of only ten years, they have been able to give it a more distinctive character—a raciness—than is found in their other buildings, excepting always, of course, the town and country types. The oldest of these designs illustrated herewith are scarce ten years old, and most of them have been completed since the war. The development is entirely a new one.

In yet another way these shop fronts are significant. They give the best answer to that vice of the modern art world—the desire to create a wholly new set of style forms which have no connection with anything in the past. These fronts prove that one need not break with the past in order to have a modern art. They are alive with the modern spirit, yet they have not discarded tradition. They are not copies, and the best of them are so original that they cannot even be called adaptations. Tradition appears in their perfection of proportion in minor motives and details, and even these motives are invested with a freshness which transforms them. In other words, these designs draw upon tradition as a vocabulary of forms, the very richness and familiarity of which serves all the better to express new ideas. "Hitch your wagon to a star," said Emerson, and critics saw that it was precisely the familiar speech of the Yankee barnyard which made the phrase so expressive. They realized that Emerson was evolving a true American style. And, in the same way, these shop fronts possess style, though, of course, their elements are urban—not rustic.

I refer to the extreme modernist theory of art because I fear we shall hear much about it. There are signs that American architecture is threatened with a depreciation in taste. Attempts are being made to introduce modern German forms into American architecture. This occurred before the war, and since the war the effort is being renewed. A notable instance was the preliminary design for the Iowa State Capitol, in which "moderne bau-

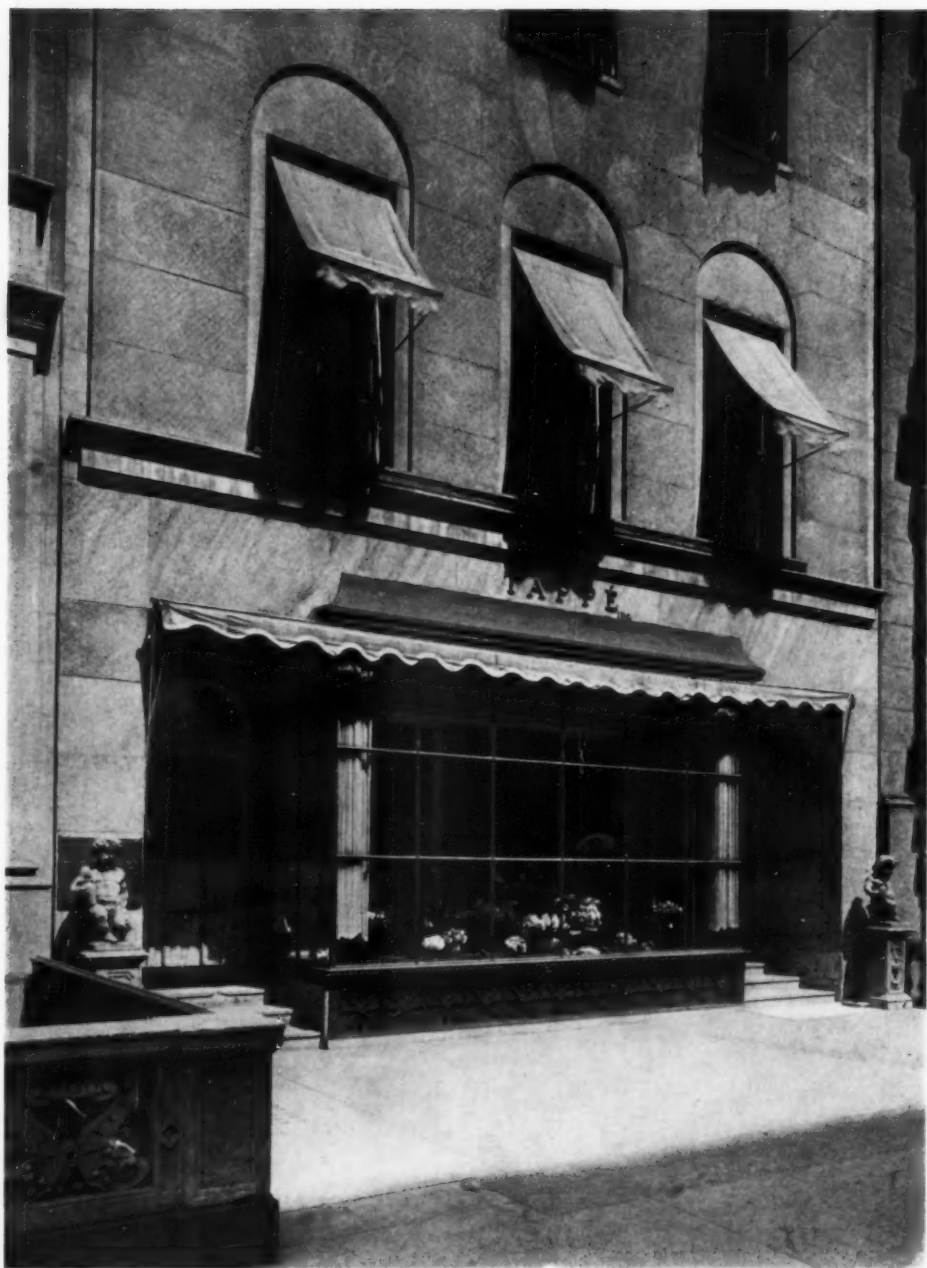
formen" were mingled with neo-Greek details. And in the winning design for the Masonic Hall at Portland, Oregon, they dominate the elevations entirely, although the terms of the competition stipulated that only forms of American origin were allowed. Surely no early American buildings of our town-and-country types show forms such as these, nor does our developing city architecture, such as the store fronts, have any resemblance to them; they are distinctly German in origin.

Let it be hoped that American architecture will suffer no more raids like this. These are severe words, but they should be used of attempts to break completely with the past. If the aim is to avoid convention one may observe that modernized art drops into convention much more than does traditional art. This is because it has such a weak vocabulary. Its designers are forced to repeat its few forms and colors indefinitely until they lose all meaning. Hence, in modernist architecture there is a tiresome repetition of verticals, of blank unfinished warehouse-like walls and crude, unproportioned openings. Besides, modernist art is at best an art of two dimensions. It produces little that is effective in three dimensions, because here, again, its vocabulary is not sufficient to carry it into solid geometry. So far it is chiefly intellectual paper design.

But the final argument against breaking with the past is, in my opinion, to be found in the best modern architecture of Germany itself. Its most successful examples, like the noted department store of Wertheim in Berlin, are strongly reminiscent of medieval tradition. Its exterior walls, verticals, roofs, proportions, the splendid interior of the long two-storied rug room with tall, Gothic-like windows along one side—what are these but a modern version of the old German medieval style of Nuremberg, Rottenburg, and the old Rhenish towns? Modern German housing is designed in the same spirit, and is also inspired by modern British housing, which, in turn, expresses the old medieval English tradition. In brief, the whole modernist move-



NO. 548 FIFTH AVENUE, NEW YORK.
CARRERE & HASTINGS, ARCHITECTS.



MILLINERY SHOP, 8 WEST FIFTY-SEVENTH STREET,
NEW YORK. KENNETH M. MURCHISON, ARCHITECT.



SHOP FRONT, 8 EAST FORTY-FIFTH STREET,
NEW YORK. WALKER & GILLETTE, ARCHITECTS.



JEWELRY SHOP, 398 FIFTH AVENUE, NEW YORK. BUCHMAN & FOX, ARCHITECTS.



JEWELRY SHOP, 574 FIFTH AVENUE, NEW YORK. AUGUSTUS N. ALLEN, ARCHITECT.

ment in Germany may be described this way: after a short period of wild and unsuccessful experimentation it sought once more the path of tradition and thereupon became sounder and saner. The net result was to change from the pseudo-Renaissance style of the German Empire to the old native German tradition, which it interprets flexibly in the spirit of the times. Viewed in this light the German revolution in architecture had a certain justification.

If we realize that modern German architecture is not so modernist as it is alleged to be, we are less likely to throw over our own native styles for the German forms. Whether we admire the German architecture or not, at least it is not ours, and it is suited neither to American society nor to our natural conditions. We should be glad that our own architects have solved American problems of architecture in their own fashion.

All these broader aspects of the place of store fronts in modern city architecture serve to establish the importance of the shop fronts and make their significance clearer.

Taken simply by itself, the shop front is a device of modern salesmanship. The small shop is primarily a personal matter, and only the decisive personality of its proprietor enables it to compete with big organizations. Excellence of wares is not enough for this. A merchant must invest his shop with a distinctive personality if he is to maintain his place on Fifth Avenue—paying high ground rent, be it remarked—and if from a little plot of ground, twenty-five feet or twenty feet by one hundred, he is to draw customers from a whole continent. Fifth Avenue is one of the half dozen streets of the world. A part of the world seems to stream through it, and worldliness, magnificence, luxury and fashion and city life are its very essence. The shops partake of this spirit, exist because of it, and contribute to it, and Fifth Avenue merchants compete successfully with thousands of shops in New York and in other cities.

The Fifth Avenue shop expresses perfectly the idea of salesmanship—to arrest

the passerby, to attract, to arouse his curiosity and his needs, and to persuade him to enter. And yet how artistically, in what perfect taste, does it solicit. There is none of that vulgar, tawdry insistence in blank plateglass, gilt lettering, crude forms and gaudy colors which seem to be the rule of shops the world over. Why are the hundreds of thousands of small shops of the world so alike? And why are they so commonplace?

It is really curious how recently shopkeepers have paid attention to stylish appearance. Ten years ago, as I have noted, none of these shops existed, and New York shops were not greatly distinctive. It was the Parisians who seem to have inspired the new ideal. Who does not recall the fascinating displays of wares in the little shops of France? No matter what kind of a shop it may be, whether for ladies' wear or for groceries, good taste dictates the arrangement, because the French know that art is art whether revealed in a pattern of silks or jewels or one of hams. One always remembers the charcuteries found everywhere in Paris, whose windows hold an alluring array of jellied meats, beautifully colored preserves in shapely bottles, and handsomely labelled tins and countless dainties, all arranged in perfect taste. To compare the charcuterie with a New York delicatessen store would be a desecration.

Window display is well understood among the French, and in the last ten years it has spread widely in this country. Besides designing their windows, the French conceived the idea of providing a frame or setting of architecture for the show window, and then they developed the inside arrangement and design of the shop itself to a high degree of taste. A few of these Paris shops became famous, particularly those on the Grand Boulevard, near the Place de L'Opera and the Place Vendome and along the Rue de Rivoli. Chief among these are the luxury shops of the Rue de la Paix, whose taste and smartness and fashionable clientele—drawn from the whole world—mark perhaps the greatest heights which the small retail shop has ever reached.



NOS. 618 AND 620 FIFTH AVENUE, NEW
YORK. McKIM, MEAD & WHITE, ARCHITECTS.

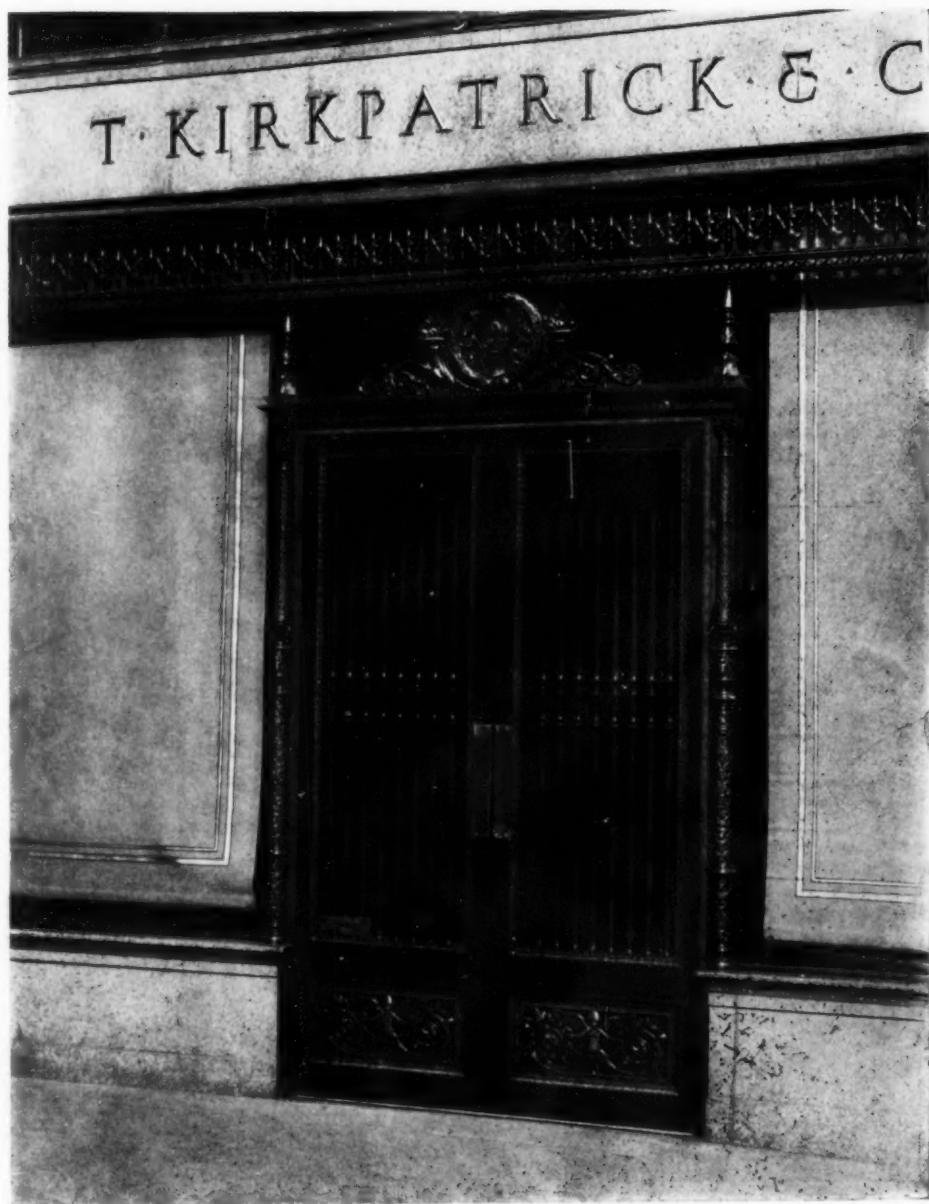


JEWELRY SHOP, 634 FIFTH AVENUE, NEW YORK.
George Provot, Architect.

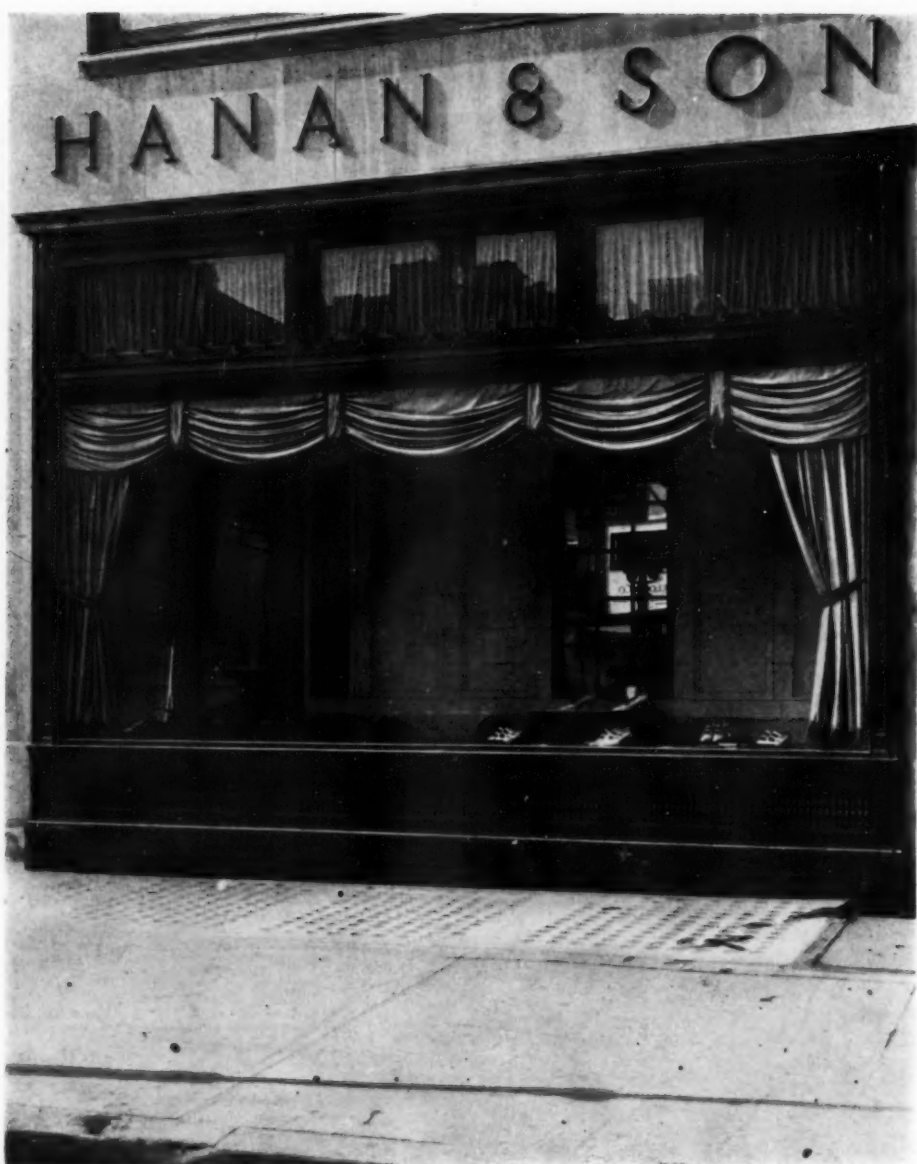
New York proprietors emulated their Paris rivals when, about ten years ago, upper Fifth Avenue became the fashionable retail center of New York. The first improvement came in window display, then in the interiors, and last of all in the design of the shop front. Even today the number of distinctive shop fronts in New York is small, if one excludes the many fine shops which occupy space in ground floors of large buildings, whose windows are a part of a large scheme of architecture and which have therefore no individual character of their own. There are scarce more than a score of distinctive shop fronts in New York today, most of them on Fifth Avenue. To these may be added a small group in Boston, where, in the district of the Common, along Boylston and Tremont Streets, a number of interesting shops were established about fifteen years ago; a few shops

on Chestnut Street, Philadelphia, and a few on lower Charles Street, Baltimore. The number is so far not large, and if one included the slightly older group of Paris shops I believe that one would be troubled to find as many as a hundred shops in the whole world whose standard equals these herewith illustrated.

This New York group is the chief element in the fine architectural appearance of Fifth Avenue. It is the only factor which gives the avenue a consistency of architecture, and a consistent architectural scale and style. Unfortunately, Fifth Avenue suffers from the doctrine of eclecticism which was embraced by our older generation of architects, and, notwithstanding its many fine buildings, harmonized by the use of limestone and marble and bronze details, Fifth Avenue is not a beautiful street. Its units are not harmonious. Eclecticism may have ap-



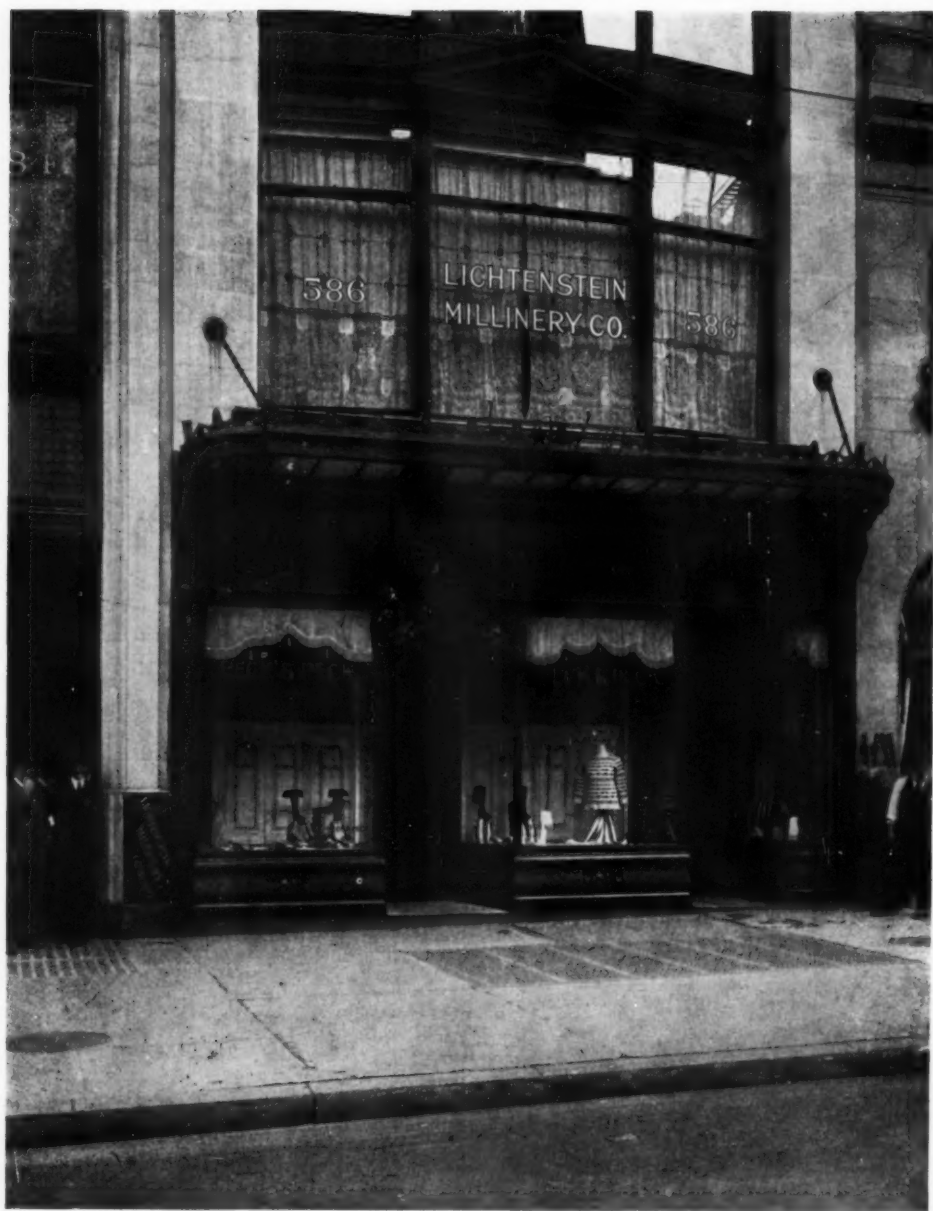
DOORWAY—JEWELRY SHOP, 634 FIFTH AVENUE,
NEW YORK. GEORGE PROVOT, ARCHITECT.



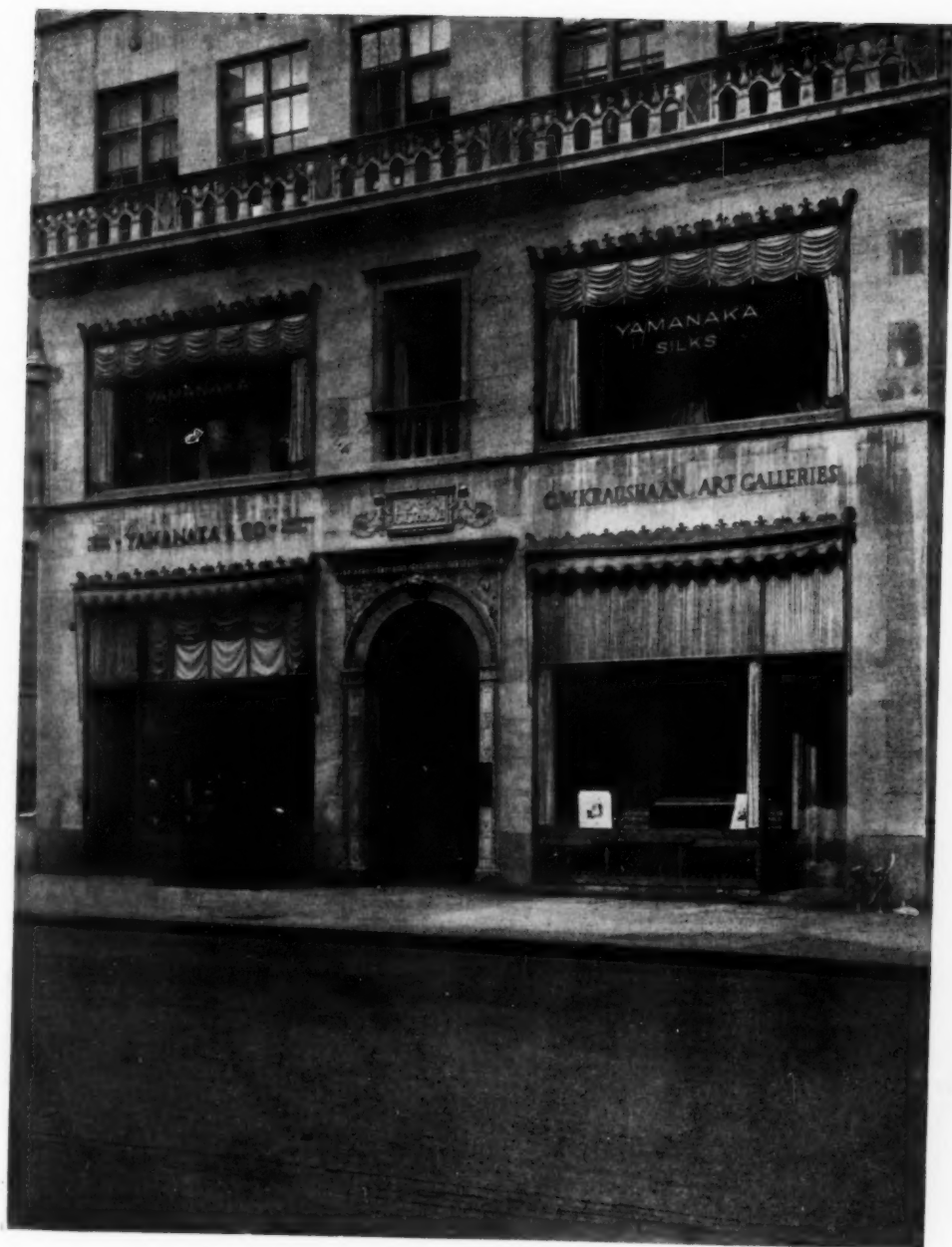
SHOE SHOP, 718 FIFTH AVENUE, NEW
YORK. A. D. SEYMOUR, JR., ARCHITECT.



LADIES' UNDERWEAR SHOP, 543 FIFTH AVENUE,
NEW YORK. HORACE GINSBERG, ARCHITECT.



HOSIERY SHOP, 586 FIFTH AVENUE, NEW YORK.
GEORGE & HENRY BOEHM, ARCHITECTS.



TWO ART SHOPS, 680 FIFTH AVENUE, NEW
YORK. W. W. BOSWORTH, ARCHITECT.



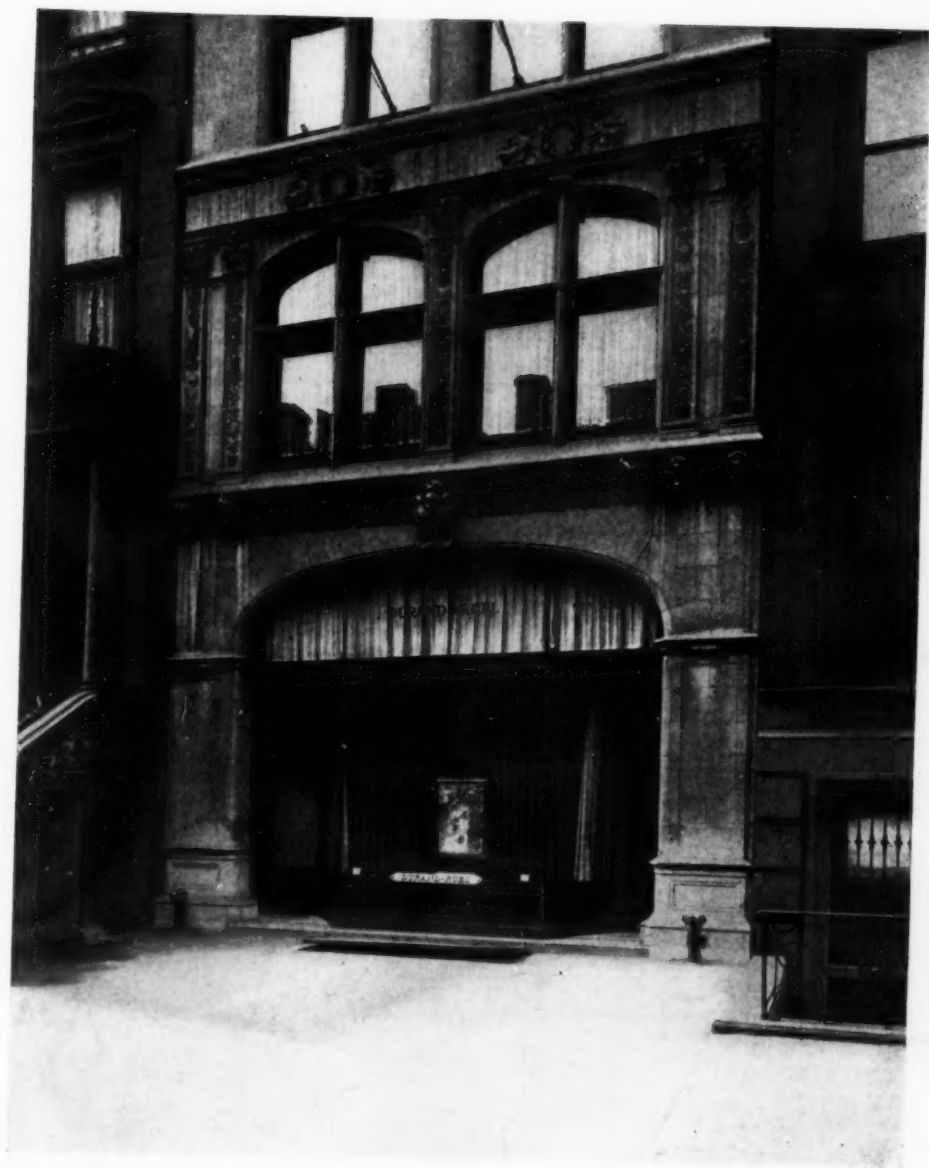
JEWELRY SHOP, FIFTH AVENUE AND
FORTY-EIGHTH STREET, NEW YORK.
CARRÈRE & HASTINGS, ARCHITECTS.



JEWELLERS' BUILDING, FIFTH AVENUE
AND FORTY-EIGHTH STREET, NEW YORK.
CARRERE & HASTINGS, ARCHITECTS.



FUR SHOP, 670 FIFTH AVENUE, NEW YORK.
HENRY OTIS CHAPMAN, ARCHITECT.



ART SHOP, 12 EAST FIFTY-SEVENTH STREET,
NEW YORK. CARRERE & HASTINGS, ARCHITECTS.



ART SHOP, 16 EAST FIFTY-SIXTH STREET, NEW
YORK. TROWBRIDGE & ACKERMAN, ARCHITECTS.



MEN'S FURNISHINGS SHOP, 572
FIFTH AVENUE, NEW YORK.
AUGUSTUS N. ALLEN, ARCHITECT.



NO. 377 FIFTH AVENUE, NEW YORK.
SEVERANCE & VAN ALLEN, ARCHITECTS.



RESTAURANT, 377 FIFTH AVENUE, NEW YORK.
SEVERANCE & VAN ALLEN, ARCHITECTS.



SHOP FOR LADIES' WEAR, 448 FIFTH AVENUE, NEW YORK. HARRY ALLAN JACOBS, ARCHITECT.

peared reasonable in the design of isolated country houses, where the houses were placed so far apart that they could not be compared with one another, and no disharmony resulted through using various styles. Even in the cities, where a generation ago good buildings were rare and could therefore not be seen together, an architect could hardly take neighboring structures into account in a new design because these were almost certain to be bad. Eclecticism in such conditions had no very evil effects. But now the situation is different. Some American streets, like Fifth Avenue, are filling up with fine buildings and the lack of unity of styles between units creates ugly street walls. Such a practice will never produce a fine city architecture. Beauty of neighborhood cannot exist under eclecticism. Like many another theory, eclecticism is subject to the law of diminishing returns. One of the virtues of these new shop fronts is that they break definitely with eclecticism, in that they tend to make Fifth Avenue, as far as they can, an architectural whole.

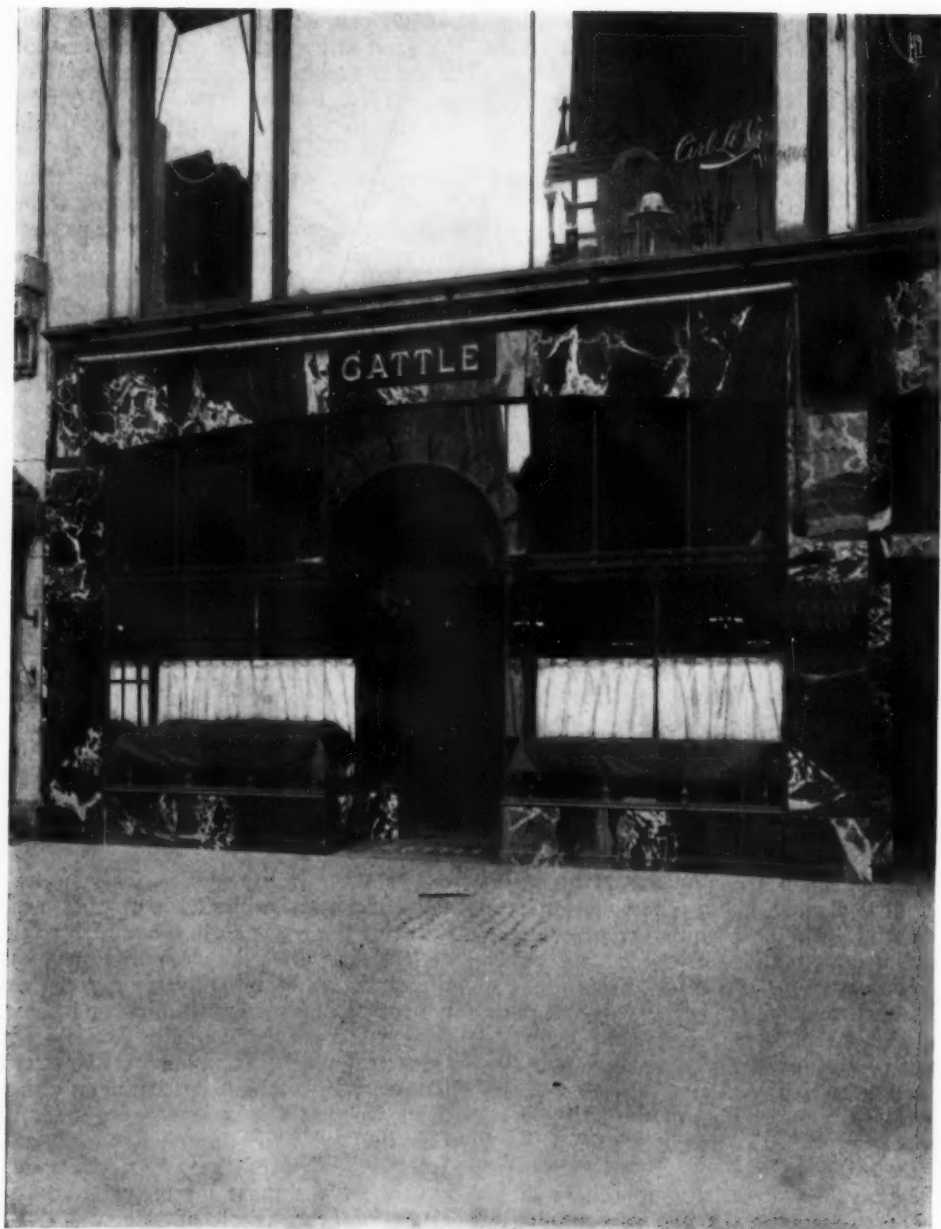
Having thus covered the chief points of interest of the shop fronts, a brief notice will suffice for individual examples. In all the variety of motives, two types appear. One portrays the older idea of making the front all glass, and of squeezing all possible space out of it for window display. The other concentrates attention on a more limited window space and heightens the desired strong effect of enframing the picture made by the show window with a decisive architectural setting. The latter idea has the advantage of making the whole shop more distinctive and of yielding a better appearance in the upper part of the building by providing a well-defined architectural base.

Lately, however, attempts have been made to combine the two conceptions by a new method of planning. In this method, the fronts are recessed or splayed back from the building line, thus creating a small corridor or vestibule which is used for show window space. Many ingenious arrangements of plan of this type are seen in the shops of upper Broadway,

but, unfortunately, they are most crudely designed in bare sheets of plate glass and have no architectural distinction. It remained for the Avedon shop to develop the idea to the full. On the front of this shop the windows are small enough to leave plenty of wall space for enframement and also for the good appearance of the whole building. A short passage, about six feet long and containing two wall windows at each side, leads from the street into a circular vestibule, some twelve feet in diameter, where six more windows radiate from this center. Then one enters from this vestibule into the shop itself. By this device the architect provides ten show windows in a space about twenty feet square, all of them opening off the street and allowing the passerby to view the displays of goods undisturbed by the sidewalk throng. The vestibule and windows of the Avedon shop are kept lighted through the evening, and so continue to function after the shop is closed. Each window is carefully designed with an architectural background in plaster, imitating Caen stone, well shaped in plan, some windows containing small niches for plants. This shop, just completed at the time of writing, is the highest development of the shop front so far as plan is concerned on Fifth Avenue.

The other fronts speak for themselves. All are original, although a number clearly reveal the Parisian heritage of the Rue de la Paix. One, the shop on Forty-fifth Street, is a charming, yet vigorous, exponent of the medieval spirit and shows the small town flavor of the English shop front, of which a number of fine examples exist in England. It is the only shop using wood in this series, except one, "La Camille," which is designed in light oak, following some of the shops of Paris.

One of the most masterly designs of all is the shoe shop of Alexander, designed by Carrère & Hastings. Its fascinating interest, its perfection of proportion and of scale, its exquisite details and harmonious color—in form reminiscent of Italy—make it as beautiful a building as exists on the Avenue. The jeweler's building at Fifth Avenue and Forty-



JEWELRY SHOP, 630 FIFTH AVENUE, NEW
YORK. STARRETT & VAN VLECK, ARCHITECTS.

eighth Street is another Carrère & Hastings triumph, which I have included on account of its beauty, though it is larger than the small retail type, which alone is considered here. These two buildings were erected shortly before the war.

But the masterpiece of all are the two fronts at Nos. 618 and 620 Fifth Avenue, designed by McKim, Mead & White. From every point of view here is the most perfect expression of the small city shop in New York. Original to the point of daring, striking in contrast of black and white, a perfect type of city shop scale, it is alive with the modern spirit—a Chicagoan could admire it, yet withal its proportions are so pure, so harmonious, so graceful, its details so exquisite that an Athenian would find it beautiful. Here is the proof that architecture may be vividly modern in spirit without sacrificing the classic ideal of perfect form. I believe that no more important contribution has been made to modern art by American artists than this building.

McKim, Mead & White have established in this design the value of tradition in modern art beyond all doubt. Its tradition is in the spirit, not the letter, because the most extreme modernist could scarcely discover conventional form in it. A microscope on the photograph would show historic traces of capital and base on the verticals, something familiar in the cornice and in the delicate terra cotta border enclosing the black marble slabs—that is all.

As far as modernism is concerned, there is even humor in the color scheme of the building. Black and white is the maximum value contrast, the very motive which, a few years ago, found favor in the modernist school. At the time this store was built an eminent modernist designer in Vienna attracted attention by a daring use of black and white. Yet here are New York classicists doing the same thing, very carefully, of course, for they harmonize it ever so slightly by design—making the black predominate over the white, and not allowing any black area to become too large—and by finish of detail; the white is cream, and the black marble is toned down with a dull rubbed

finish until it looks more like black slate than like coal. Decidedly in this building McKim, Mead & White have put the modernists in a hole.

This store front has added interest if it be compared with the older stores of the firm, for example, Gorham's on Fifth Avenue. Gorham's at the time it was built was considered one of the best examples of the genius of McKim, and was the model for many another commercial building. But when compared with the newer work it shows how far shop architecture has advanced in the ten years between the building of the two. Gorham's is an adaptation of the early Italian palace front to the American shop, and the result is certainly not the most successful of McKim's achievements. There seems to be a slight disharmony of scale between the base, top and middle parts of the building, and it lacks the characteristic scale of the city shop as architects have since established it. One may read the story of the progress in the Gorham building and in the new furrier's shop next to it on Fifth Avenue, the latter a splendid symbol of city shop scale.

Thus the perfecting of the city shop scale is another remarkable triumph which McKim, Mead & White have achieved in the 618-620 Fifth Avenue Building. In this, as in other respects, it is superior to the older Gorham's. With such an example to follow, the shopping streets of American cities bid fair to emerge from their ugly chaos and become worthy standards of city architecture. Zoning laws can aid the work by establishing height restrictions and thus prevent an ugly skyline from ruining the aspect of a city street. Such help is all that architects need in order to perfect this, their new achievement in solving the hitherto unsolvable problem of city architecture. They are creating a beautiful commercial architecture in these small shops, in all ways typical of the modern city and of modern times, yet still maintaining the classic tradition of perfect form. Despite our town-and-country traditions we are at last beginning to sense the spirit of the city.



FIG. 3. VARICK STREET SIDE OF HOUSE AT 51 CHARLTON STREET, NEW YORK, REMODELED BY FRANCIS V. JOANNES, ARCHITECT. FIRST FLOOR HAS STORE AND APARTMENT OF TWO ROOMS AND BATH; SECOND FLOOR, APARTMENT OF FIVE ROOMS AND BATH; THIRD FLOOR, STUDIO, WITH FOUR ROOMS AND BATH.

TENDENCIES IN APARTMENT HOUSE DESIGN



Part I. Examples of Remodeling

BY

FRANK CHOUTEAU BROWN

THE progress of the race and of the individual is only to be observed or traced by means of occasional balance sheets struck to obtain variations from direct curves, or to disclose new and unanticipated changes occurring in relation to other contemporaneous events. These variations once realized, it is then easily possible to chart their divergencies, and thus re-establish the curve of progress for the future. By these means is it also possible for the individual to discover what particular value these recent disturbances or changes may have for his own particular problems, or business prospects.

It was with such thought in mind that these investigations into the present situation of apartment house development the country over were undertaken—for it is, of course, a foregone conclusion that the many changes, economic, industrial, financial, the country has undergone since its advent into the great war, must have some reaction, of whatever kind, on this popular type of building, that would exercise an influence for good or ill upon its future development. These influences it is most important for the architect to understand. It is equally important that the investor should study and comprehend them—and, nowadays, it is not too much to assume that the public, which has so largely to “pay the piper” in all these experiments, is also vitally concerned.

What follows in this and succeeding articles will, therefore, be selected to apply to one and all of these individuals named. What intensely concerns one, should concern all, sooner or later—the more especially if the arising interest in “cooperative apartments” should amount

to anything of importance in the years soon to come.

Every endeavor has been made to draw information, and the material for illustrations, from all parts of the country alike, not with any idea that it would be possible fully or even adequately to cover the special divergencies arising in any one particular locality—but rather in the endeavor thus exactly to illustrate the particular local types found in different sections, so that all could benefit and judge whether these local types contained anything of applicable interest to their own localities. With that thought in mind both publishers and writer would appreciate hearing immediately from any individual or locality where it is believed that there has been evolved any particularly novel or individual local contribution to the subject. Such suggestions will be welcomed and made use of in the later articles in the series here under way.

An exhaustive treatment can not be undertaken—in the illustrations at least. Already it has been found that they contain a notable tendency to revert to particular types. Therefore, in a mere effort at economy of paper and space, the endeavor will be made to deal with representative examples only—representative as to type plan, elevation, and locality, as well. It is further obvious that, as yet, too small an amount of time has elapsed since the American apartment plan was first intentionally attempted (in connection with our existing industrial and economic difficulties) to show, in many ways, other than a mere hint as to the next logical and progressive step to be made.

Outside of a few groups of notable exceptions—later to be taken up in detail—

the "apartment house problem," for the present, principally concerns us only insofar as it affects our larger "middle classes," a rather overlooked and forgotten part of our population, that has nevertheless to live—and find habitation—somehow and where.

As to the poorly paid unskilled laborer, no attempt, with but rare exception, is made by either parental government authority or by the individual, to provide housing of low cost for him and his family. The problem is too difficult and too obviously barren of resultant income to appeal to the speculative builder as a profitable business venture. So far, our governmental control—whether city, state or national—has been confined to restrictive legislation, intended to ameliorate living conditions for the very poor, but as a matter of practical fact, causing their position to become only the more onerous.

Many of these "tenement house laws" are so inclusively worded as to apply to almost all types of apartment dwellings, and consequently they have hampered, although they have not arrested, the building of new, or the alteration of old, dwellings to meet the living conditions and needs of the better classes of tenants.

It is with attempts made along the line of altering old dwellings into apartments of informal and less expensive type for middle class tenants that this article is particularly concerned. Such alterations are, for the moment, the only available means of quickly and inexpensively increasing the housing capacity of our more crowded cities.

The larger American city provides but two directions of possible progress—the building up of unimproved property (this almost always means upon the city's outer perimeter); or the improving of existing built-upon property according to standards of greater efficiency or capacity.

As to the former, unimproved property in desirable sections of our large cities is scarce—and is growing steadily more and more costly. It is therefore only available, when obtainable at all, for

the more costly and expensive forms of housing development.

When we turn to the second alternative, it means that, in the demolition of existing buildings to obtain sites for new structures, we are almost always demolishing structures that are already living quarters—of sorts—and far too often the new buildings erected on these sites are commercial rather than residential—thus failing utterly to help in the immediate problem of providing more housing, with which we are primarily concerned. If apartment houses entirely of new construction are placed upon these sites, we may improve or increase their housing capacity, but we are certainly increasing and raising their rental costs, so as to make them available only to a far better paying class of tenants. Meanwhile the old dwellers upon this property have been forced to find for themselves habitations probably even more congested and less desirable than before.

In this emergency—and failing the construction of newly built accommodations capable of meeting the demand for low rentals—family after family has been forced to turn for relief to the suburb or country, or to the older built sections of the city in which they dwell. And in the latter direction, at least, the result nearly always takes the form of a more or less informal or "made over" type of living apartment.

Every large North American city possesses certain "downtown" sections that were at one time fashionable but, from one cause or another, have now outlived their original usefulness for private dwellings, and so are now to be found in some one of the several stages of the down grade of premises—boarding house, office, small trade or factory, to tenement.

All our cities possess old sections crowded with houses of this type, in many cases dwellings of once proud dignity and beauty—and such structures can, by the exercise of some ingenuity and taste, be made over into most interesting dwellings or apartments, as has long been recognized and proved by our artists in Greenwich Village, around Washington Square, on Beacon Hill, or



FIG. 2. DOORWAY OF HOUSE AT 39 CHARLTON STREET, NEW YORK, REMODELED BY FRANCIS Y. JOANNES AND MAXWELL HYDE, ARCHITECTS.



FIG. 1. REMODELED HOUSES AT 47 TO 51 CHARLTON STREET, NEW YORK.
Francis Y. Joannes and Maxwell Hyde, Architects.

in the quaint little side streets and "places" that alternate with more important thoroughfares in Philadelphia and St. Louis. And it is a comparatively recent discovery that we have the ability, by making over these old dwellings by some slight alterations into apartments of informal type to house quickly and comfortably several families where only one may have been housed before. Incidentally, it also must be recognized that, in several of the instances illustrated herewith, the process has actually consisted of housing, perhaps, three or four families where a dozen or fifteen had formerly lived.

The type especially to be considered now is rather the sort of apartment that may be made from part of an older dwelling of the kind that now cumbers so much side-street property in our larger cities, or is found in a neighborhood lying adjacent to some newly devel-

oping business section. The old dwelling property remaining after the current of fashion has moved away, may be still good in its kind—indeed, so far as construction and workmanship are concerned, it is very likely to be better than the newer and more fashionable dwelling that has supplanted it. Too good to pull down, it is yet, in its present state, suitable only for use as a rooming or boarding house—a purpose that is little likely to prove lucrative to the owner, or conducive to maintaining the dignity and repair of the habitation itself, or of the neighborhood of which it perforce still remains a part. Its abandonment to that purpose is, truly, but the first step of a rapid descent to uses more shady and less reputable, undesirable to the owner the more particularly in that it means a permanent and certain eventual lessening of his property value.

But to what other purpose does it



FIG. 4. HOUSE AT VANDAM STREET, NEW YORK, REMODELED
BY FRANCIS Y. JOANNES AND MAXWELL HYDE, ARCHITECTS.

stand available? Here is, perhaps, the key to a new opportunity. Generally such a structure is in a convenient "down-town" neighborhood, near the business district, and conveniently adjacent to the theatres and restaurants of the city. This makes it naturally desirable for "bachelor" purposes—for writers, business men, artists, actors and musicians, provided only they may be interested, attracted and held by a reasonable rental, and the convenient arrangement of whatever material already exists to work with.

A knowledge of the successful treatments of this sort already in existence will, if better and more widely spread, be of some little help and assistance elsewhere in meeting this imminent housing shortage. It will further, if cherished

and developed, be helpful in many cities to uphold the values of property at present abandoned too early to decay, and so be of helpful tendency in maintaining the civic pride and usefulness of our American communities, across the entire continent. It is a valuable and easy panacea for the great and prevailing disease from which so many of our American cities are doomed to suffer—the "growing pains" inseparable from their too rapid and undirected growth.

Let us therefore suppose, as typical cases, a house on some side street in down-town New York (Fig. 1), or a smaller structure in one of Philadelphia's or St. Louis' alleys—possibly still more conveniently "down-town"! It may often happen that the exterior is already at-

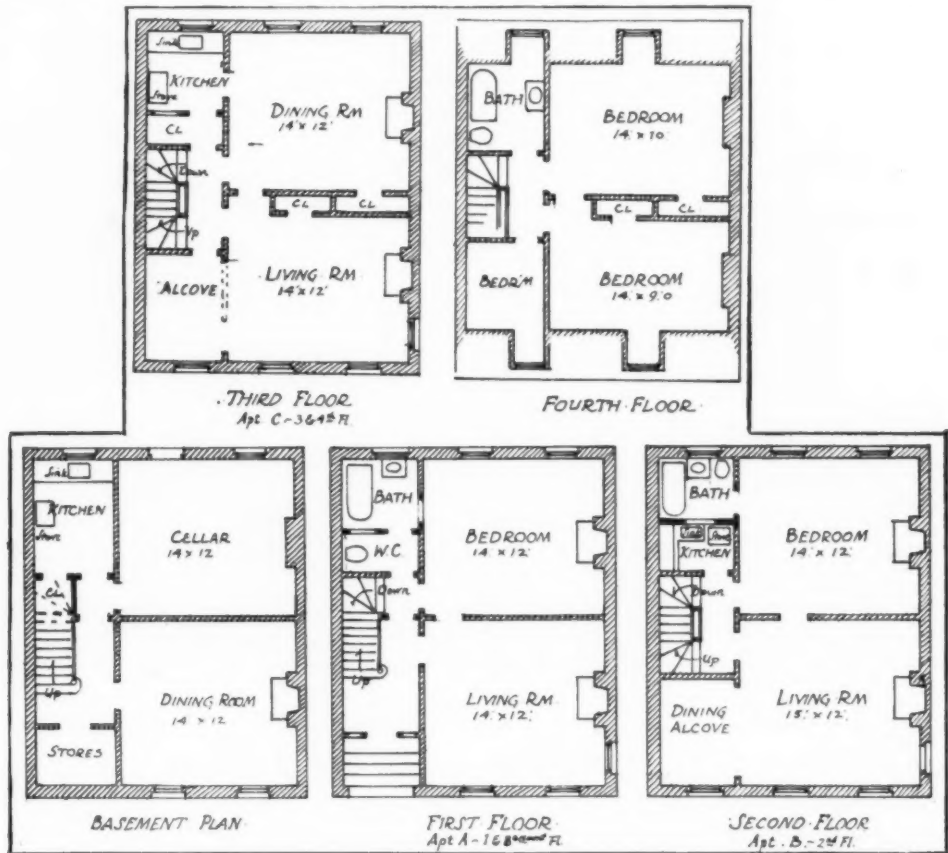


FIG. 5. PLANS OF ALTERATIONS TO OLD HOME ON BEACON HILL, BOSTON.

Frank A. Bourne, Architect.

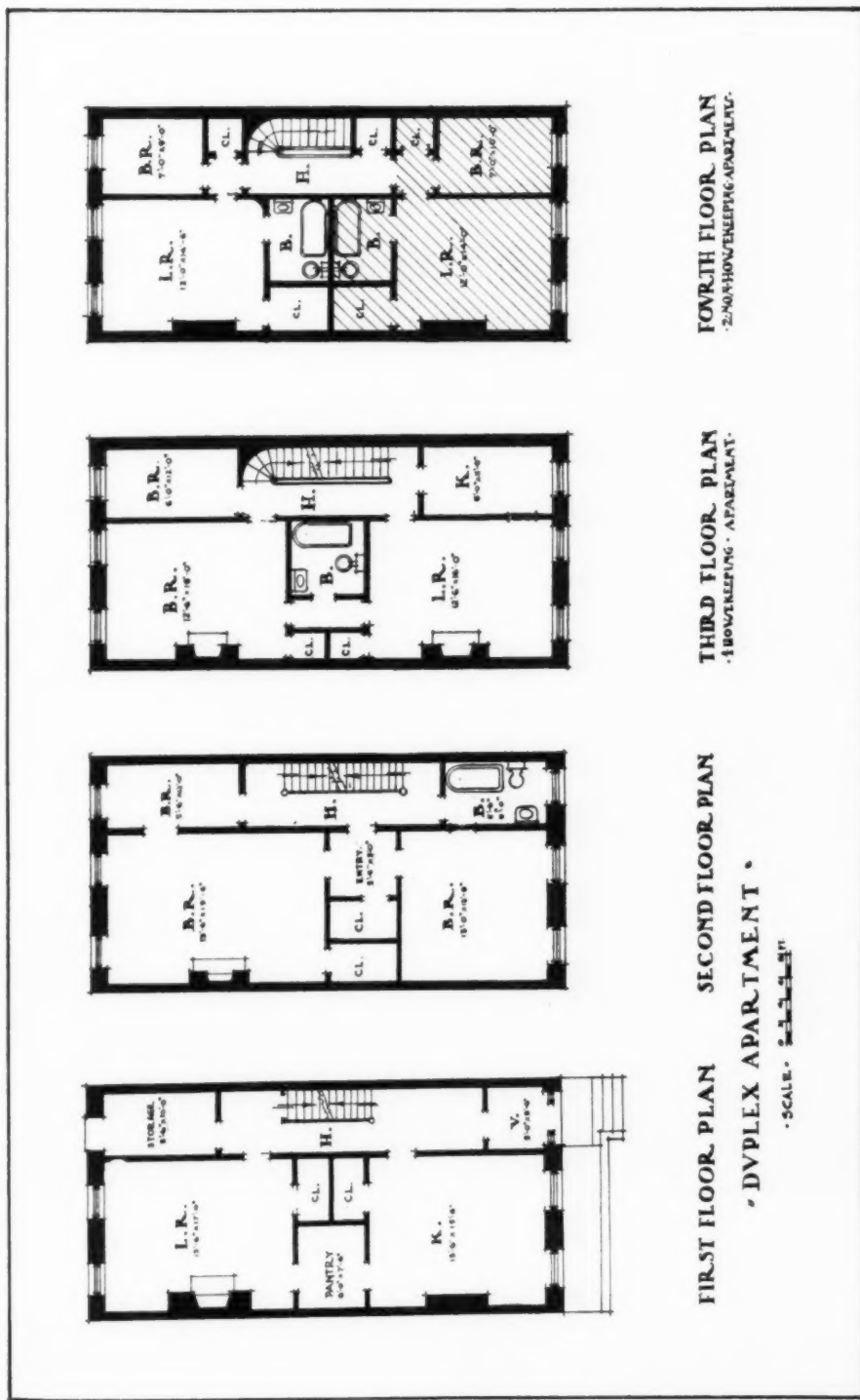


FIG. 6. PLANS OF ALTERATIONS TO HOUSES AT 74, 78 AND 82 MACDOUGAL STREET, NEW YORK CITY. FRANCIS Y. JOANNES AND MAXWELL HYDE, ARCHITECTS.



FIG. 7. ALTERATIONS TO STORES AND TENEMENTS
AT 170 BLEECKER STREET, NEW YORK. FRANCIS Y.
JOANNES AND MAX WELLS HYDE, ARCHITECTS.

tractive, perhaps Colonial (Fig. 2), in the simplicity of its brick façade, so that little or nothing needs to be done with that. We may then direct our attention almost solely to the interior and its arrangement. In the case of some New York examples, we are, of course, likely to be less fortunate, for there many of the areas open to this sort of improvement are an arid architectural waste of dull brown-stone "fronts"—and Heaven only knows what "backs"—with little of interest or allure to the artist or individual of taste to whom the owners of this type of property have found it most profitable to appeal.

So we shall find in New York, or other of our over-crowded American cities, that an effort has been made to modernize these old façades by some simple means—either by merely sloughing off most of the misdirected "ornament" with which the original front has so long been over-burdened—or by resurfacing with plaster or brick veneer, to endeavor at once to simplify and improve its appearance, so that it will appeal to its new class of occupants without delay. Of course, in particular instances, we shall find that the potential value of the property or its neighborhood will even warrant the extravagance of entirely rebuilding the front upon the street—but, after all, in the greater majority of instances, this particular type of development is only undertaken as a temporary stop-gap to fill in some transition period when the use of a district is changing from residential to business purposes, and the growth of the latter demand is likely to be too slow for the owners to sit calmly by, watching their property meanwhile depreciate in value and income, without attempting to do something about it. So the problem is almost always one of obtaining the greatest result with the least possible amount of actual expenditure; of retaining and making use of as much as possible of the old structure with the minimum allowable amount of change or repair—and so is it always necessary only to undertake such alterations in the plan as the arrangement of the house originally makes most easily possible. This would seem to be likely

to make every solution different from every other, and so it would be were it not for the fact that the older city houses of the periods generally affected were curiously alike in plan and arrangement (Figs. 5 and 6) and consequently it is possible to show certain "type arrangements" as the most obvious general bases for the better development of property of this type and kind.

It is, of course, necessary for the owner first to determine whether he is to attempt to obtain one or two suites upon each floor; whether the demands of the neighborhood make it desirable to place a store upon the first floor (Fig. 3) and to what common purposes it is necessary to adapt the basement. If the apartments are very restricted in area it is perhaps necessary to provide storage spaces for all occupants in the cellar. In most neighborhoods it is neither necessary nor desirable to make janitor's quarters in the basement, for one man is more likely to take care of a number of these buildings, thus making unnecessary a resident janitor. Space for heater and coal have to be allotted, of course, even though it may be as restricted as the cellar space in the basement in Fig. 5. Sometimes the first floor, even if not made into a regular store, is adapted to semi-business purposes—by a doctor, dentist, decorator or milliner, for instance—without going to the considerable expense of lowering the floor. This is generally necessary in the case of its being deemed advisable to make the first story into a store, because most of these houses were built with a stepped approach at the entrance, with the main floor line from two to five feet above the street level. A change in the first floor also restricts the use of the space beneath, because of lowered head room in the cellar, and some stores besides require a stair to the cellar and make considerable use of the cellar area in the building for their own purposes. The staircase to the upper floors is always an awkward problem in an alteration of this type, taking away valuable store window frontage and restricting the entrance to the living suites at one and the same time; while, of course, it is sometimes considered deterrent to

the values of the residential portions of the building to have a store upon the first floor.

In some sections of New York the rehabilitation of old property to meet this new use has been carried out by means of the "basement entrance" (Figs. 8 and 10) that has been a more or less fashion-

either in width or depth—some upon the original arrangement of partitions and staircase. Certain typical plans herewith reproduced illustrate the usual arrangements. As a whole the utmost of condensation and compromise is found in the kitchens and dining portions of these apartments—the two often being crowded



FIG. 8. DWELLINGS REMODELED INTO APARTMENTS AT 180 TO 188 SULLIVAN STREET, NEW YORK.

Francis Y. Joannes, Architect.

able treatment in the new portion of that city, and is generally assumed at least to imply a fairly modern and up-to-date building. Its use leaves a first floor entirely unrestricted as to frontage by the necessity of retaining the front door and generally adds another small rentable suite in the front of the basement, while retaining sufficient space for heater and general purposes in the rear portion of the old basement story.

The arrangements of the upper floors vary only in minor details once the matter of two or one suites to the floor has been finally settled. Some of these minor variations are dependent upon the wider or narrower dimensions of the house—

into one small space (Fig 5) or the living room being also used for dining purposes (Fig. 5), and the kitchen sometimes being combined with the bath (Fig. 5), a rather less desirable and less sanitary arrangement! Of course, the storage facilities in the kitchen are always extremely rudimentary and simple, it being the general expectation that the occupants will oftenest "dine out," the kitchen being used, if at all, only for breakfast or luncheon.

The living room, too, is often made to serve the dual purpose of living and sleeping room, although we have hardly in the East yet attained to the frank abandon of the Western Coast, with the elabo-

rate disappearing beds and closet arrangements that seem to be common there in this type of apartment. In these western cities, however, the extra emphasis placed upon the outdoor life locates these small "telescoped" apartments generally in the suburbs, with rural rather than urban surroundings, and the plan ar-

and basement floors, of four rooms and bath, a smaller apartment of four rooms on the second floor, and another of three rooms and bath upon the top story (much in the manner of the plans shown for a different group in Fig. 6) will easily appeal to intelligent and appreciative tenants of the class that now most needs to



FIG. 9. LIVING ROOM IN APARTMENT AT 188 SULLIVAN STREET, NEW YORK.
Francis Y. Joannes, Architect.

rangement therefore attains to greater variation of detail.

In New York City itself it happens that a great deal of the property coming within the class now being discussed still remains in the hands of the estates that control not only many individual dwellings, but those also that are owned in groups of adjacent structures often extending for an entire block in length. This makes the rejuvenation of such property all the more easy. Such attractive old houses as those in Charlton Street (Fig. 1), for instance, with their very beautiful and gracious doorways (Fig. 2), when altered over to provide three apartments, one including the first

find inexpensive and good homes. This is at least one fortuitous circumstance that will have much to do with the restoration to favor of some of the older portions of our eastern cities. A family possessing even some pretensions to an old-fashioned gentility could hardly object to living over a store in so attractive a building as the one on the corner of Charlton and Varick Streets (Fig. 3). The first floor of this rather wide building contains besides the store, a two-room apartment and bath, a five-room and bath apartment on the second floor, and the top floor contains a studio, four rooms and bath.

A New York dwelling of another type,

hardly as good in original design and location, but yet available to alteration along precisely similar lines, appears in Fig. 4, one of a group of houses in Vandam Street, the previous condition of which, before restoration, is sufficiently indicated in what can be seen of the next façade, at the left of the picture. New light sash and shutters, with cleaning and painting down the front, is about the necessary extent of the exterior treatment, although the new shutters yet notably fail of the fine beauty of detail, scale and proportion of the old examples still left on the house shown in Fig. 2.

The set of plans of the alterations to the interior arrangement of an old house on the side of Beacon Hill, in Boston, illustrates how few the changes that are sometimes necessary in carrying out a modification such as this. In the instance selected for illustration the dwelling was originally of quite the same aspect as those last shown, being only one story higher. The basement and first floor make over into a three-room, kitchen and bath apartment; the second floor into another of two rooms and conveniences, and the third and fourth (an attic in the sloping roof) into another "duplex" dwelling of five rooms, bath and kitchenette. This particular dwelling happened to have side light in the rooms, and be of greater width (23 feet) than many of its kind. It is used here to illustrate how few changes may be necessary to adapt such a house to its new purpose, as may be seen by noticing how few are the partitions where their indication is in solid black, the remainder of the plan being left as it was before, untouched except for the necessary repairs of painting and papering of walls.

These changes that were made are substantially only those required to divide the old pantry on the first floor into a bath; the bathroom upon the second floor into a bath and kitchenette (this type of kitchenette is now unlawful in Boston—outside light and a minimum width of eight feet in the lesser dimension of the room being requirements), the division of the same space upon the floor above into a kitchen and closet and a small change

necessary to separate and make private the basement stairs.

The various changes possible in the older type of residence-tenement to rejuvenate it into a better class of property under the conditions that exist in New York City may be shown as well as may be by reference to the alterations just completed in one particular district by Mr. Francis Y. Joannes and his associates. In a group of five houses on Sullivan Street and eleven on Macdougall Street he has, by slight variations in existing partitions and a transfer of the entrance from the old first floor to the basement, along with a general freshening of the property within and without, made such inexpensive improvements as will well be repaid by the increase in rental return, and the less rapid future depreciation of the property by the better class of tenants that it will henceforward attract.

The floor plans for the houses on both streets are practically identical (Fig. 6), only varying as the entrances and staircases vary from the right to left side of the plans, as the old houses were grouped into pairs. The first and basement floors were made into a duplex five-room and bath apartment, the second floor into four rooms and bath and the top story into two two-room and bath apartments, an arrangement excellently calculated to accord with the gradual lessening in rental value accompanying the necessity to climb to the upper stories usual in New York City. In connection with this improvement, certain changes were also made in 170 Bleeker Street (Fig. 7), an old-law tenement on the corner, securing two, three and four room apartments and baths, but the plan, having interest only because of the individual requirements of the problem presented by the old arrangement of the building has not sufficient or illustrative general value to justify its reproduction here.

The exteriors of the Sullivan Street houses are shown in Fig. 8, extending from the Bleeker Street tenement on the corner, the principal structural change being a variation in the treatment of the basement entrance, while the extent to



FIG. 10. ALTERATIONS TO HOUSES AT 74 TO 94 MACDOUGAL STREET, NEW YORK. FRANCIS Y. JOANNES AND MAXWELL HYDE, ARCHITECTS.

which the mere repainting, papering, and refurnishing of the well-proportioned interiors along the simplest and least expensive lines has been successful is indicated by the single view of a room in No. 188 illustrated in Fig. 9.

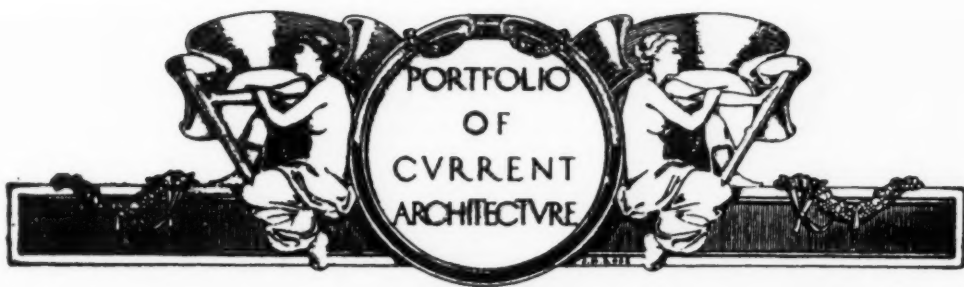
The more extensive exterior changes that were necessary in reclaiming the row of houses on Macdougall Street are perhaps sufficiently obvious as they appear in Fig. 10, although in this case a much more drastic cleaning up of the premises than may at first glance be apparent was accomplished in the general repair of the block. The mere removal of the old clumsy stone stoops and first floor entrances accomplished wonders, the opening up of the areas in connection with the change to the basement entrances did still more, as may perhaps rather vaguely still be discerned in the old house left at the end of the row, chiefly distinguishable as the place where the fresh paint stops.

Such changes as are shown in the typical examples illustrated in this article may be made in any old house, in any city where the type built between party walls may be found. With the exception of the expense attendant upon the necessary addition of new plumbing—and very probably heating, as well—the cost of the changes, if ingeniously undertaken, need not be great. The appeal of the resulting apartments, provided only they are situated in a favoring locality, convenient and accessible, is certain to ensure desirable tenants at a figure considerably over the return that may have been obtained before—and with the absolute assurance of a considerably less yearly bill for maintenance and repair. They *do* require the annoyance of dealing with more tenants, making more leases, and the expense of heating and janitor service—all of which must be figured into the rentals for the new apartments that are to be obtained. This is the sort of development that is constantly taking place in our larger and more crowded cities, and

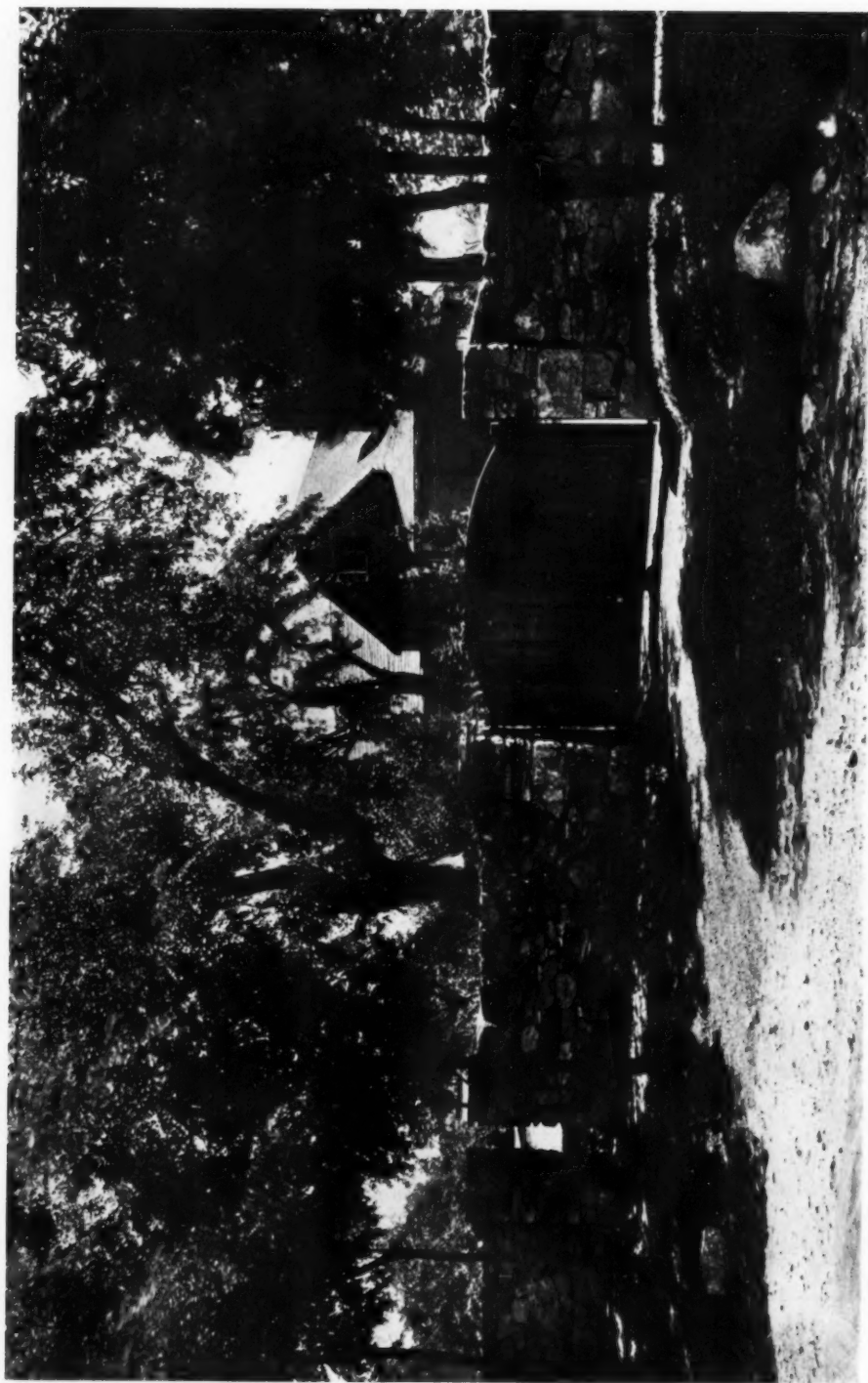
it is the sort that—because of its very modesty and unarchitectural character—is too seldom given the dignity of presentation and publication. It is, at the same time, exactly the sort of improvement that we can alone depend upon to meet the immediate situation as to housing that confronts us now—and that will continue to confront us, in our principal cities—for at least the next four or five years to come; and it is that immediacy of application to our local problems that must justify the space taken in its presentation here.

No other means for immediately meeting the demand for new housing accommodations is possible within our larger centers of population. No large building projects of this sort by private capital can be completed within several years. When completed they will—under existing conditions of labor and transportation—still be so expensive that they will do nothing to provide housing for the large middle class of Americans who are already those most in need of assistance. No practical aid is to be expected from our much-being-discussed parental government assistance—whether national state or city.

We have still to go through the preliminary several years of discussion. Such schemes, when they eventuate, will present all the political difficulties that we have already found to surround governmental control or handling of our industries—and we shall then have also to face precisely the same criticism that is now being brought forward to dispossess the government from the operation of our expensively-built shipping, the unfairness of expecting individuals to compete with the government despite the obviously uneconomical results of all our ventures of governmental administration along these or other lines within the still comparatively recent and remembered past.



ENTRANCE FRONT—"LITTLE OR-
CHARD FARM," WHITE PLAINS, N.
Y. FRANK J. FORSTER, ARCHITECT.



ENTRANCE GATES—"LITTLE OR-
CHARD FARM," WHITE PLAINS, N.
Y. FRANK J. FORSTER, ARCHITECT.



GENERAL VIEW -- "LITTLE OR-
CHARD FARM," WHITE PLAINS, N.
Y. FRANK J. FORSTER, ARCHITECT.



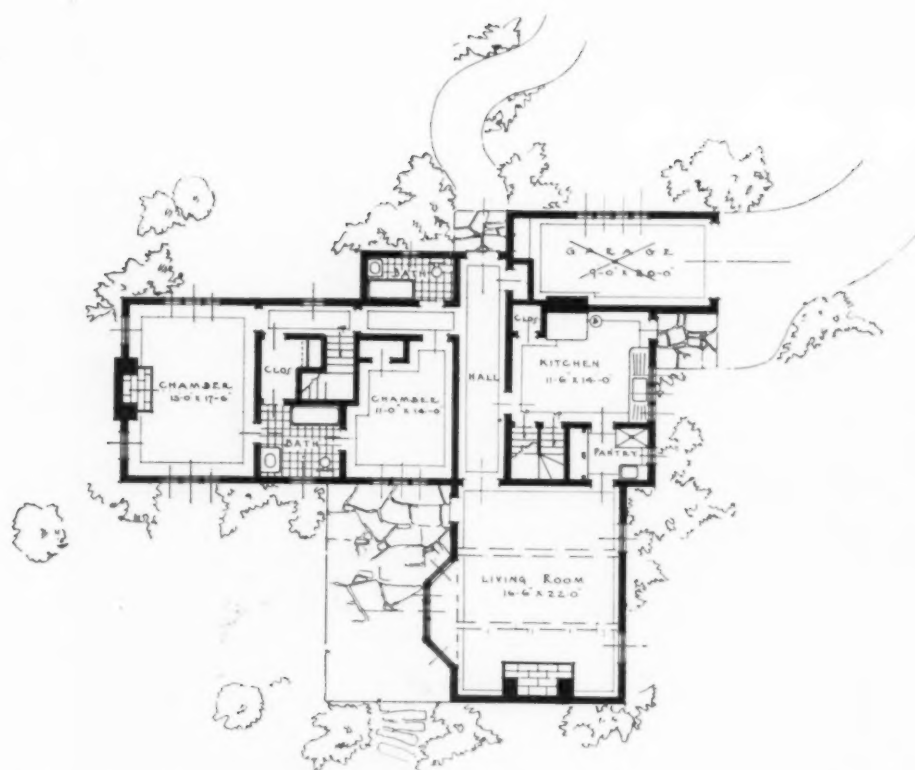
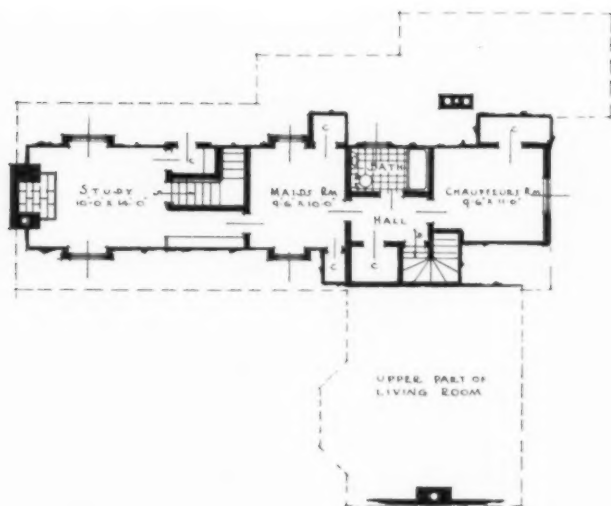
ENTRANCE DOOR—"LITTLE ORCHARD FARM," WHITE PLAINS, N. Y.
Frank J. Forster, Architect.



LIVING ROOM WING—"LITTLE ORCHARD FARM," WHITE PLAINS, N. Y.
Frank J. Forster, Architect.



GARDEN FRONT—"LITTLE OR-
CHARD FARM," WHITE PLAINS, N
Y. FRANK J. FORSTER, ARCHITECT.



FLOOR PLANS—"LITTLE OR-
CHARD FARM," WHITE PLAINS, N.
Y. FRANK J. FORSTER, ARCHITECT.



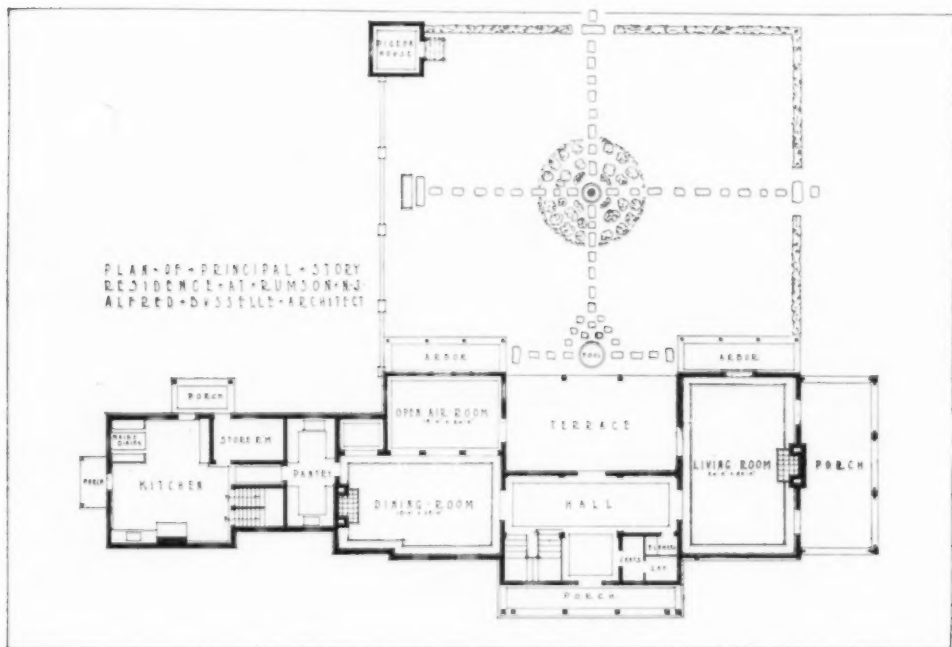
DINING ROOM—"LITTLE ORCHARD FARM," WHITE PLAINS, N. Y.
Frank J. Forster, Architect.



BED ROOM—"LITTLE ORCHARD FARM," WHITE PLAINS, N. Y.
Frank J. Forster, Architect.



RESIDENCE AT RUMSON, N. J.
Alfred Busselle, Architect.



RESIDENCE AT RUMSON, N. J.
Alfred Busselle, Architect.



COTTAGE AT RUMSON, N. J.
ALFRED BUSSELLE, ARCHITECT.

— THE BUILDING PROSPECT —

*A Study of the Major Economic Factors
Bearing on Present & Future Costs, Future
Income and the Demand for Buildings*

By

WILLFORD I. KING, Ph.D.

Part III - The Demand for Buildings

FOR more than a year both daily papers and magazines have devoted much of their space to the subject of the housing shortage. The New York legislature recently declared the situation to be abnormal and passed laws intended to check the rising tide of rents. The courts have held that the legislature was justified in using its police power for this purpose because an emergency actually existed. The public has worked itself into a state of mind in which it is ready to endorse almost any measure which promises relief, no matter how chimerical the scheme may be.

But the existence of popular furore shows nothing about the real facts of the case. Public sentiment is swayed by the emotions more than by reason, and is notably fickle. Other evidence, then, is necessary before the existence of any real housing shortage can be established.

But even should it be established that construction is in arrears, is this fact of any moment to the prospective builder? In the previous chapters of this article it has been shown that existing building costs and the probable course of rents in the future are the two considerations upon which the advisability of building must be based. If this is true, it follows that a building shortage is a matter of consequence only in so far as it affects one or both of the factors just mentioned. Does it really influence either of them in any way?

To this question, the answer must be that it actually has an important bearing upon both of these factors. If the supply of buildings is below normal, it follows that there is every probability that an effort will soon be made to eliminate the de-

ficit. A procedure of this sort must needs cause a considerable demand for both materials and labor, and such a demand will tend to stop the decline in the prices of these articles, even if it does not lead to a new advance. If a real building shortage exists, it tends therefore to make building activity revive at an earlier date than would normally be the case and to maintain construction costs at a relatively high level for a considerable period in the future.

Furthermore, a building shortage of any considerable size is not likely to be entirely remedied for several years to come, and during this interval its effect will be to keep rents somewhat higher than they would be were the building supply normal. Such a force may even prevent rents from accompanying other prices in their movement down into the cycle trough. Since values are merely reflections of anticipated rents, any force, like a building shortage, which tends to keep up rentals, necessarily makes selling values higher.

According to the principles just stated, it is obvious that the existence or non-existence of a building shortage is a matter of importance to every builder and to many architects. It is, then, worth while to try to ascertain the facts in the case. The first step in this direction is to arrive at an acceptable definition of the term "shortage." How is such a phenomenon to be measured?

Some may contend that a shortage exists whenever people do not have the housing facilities which they desire. If this is true, the shortage is likely to be extremely long lived, for one can scarcely imagine a condition in which any ap-

proach is made to satiating the desire for more or, at least, for better housing. The present denizen of a hovel may desire nothing less than a palace, and certainly only the small minority are at present housed in anything like the style which accords with their wants. Furthermore, endless construction work would be necessary to meet even the most modest requirements of the schools, the government, the railways, and the public utilities. There are a million miles of American highways which every automobilist sees the desirability of improving. Evidently, if we judge by the desires of the people, the building shortage is tremendous, always has been, and is likely to so continue for centuries to come.

Some would say, however, that needs rather than desires are the real criteria which must guide us in determining whether or not a shortage actually exists. As a matter of fact, such a change in standard only increases the difficulty of measuring the shortage. If compared to wants, we know that the shortage approaches infinity; when based on needs, we cannot arrive at any definite conclusion. Every person's wants commonly appear to him to be necessities, while to others they seem but matters of trivial moment. A common laborer who has ten children may feel that he needs a large dwelling surrounded by spacious grounds in which his children may grow up in health and vigor and have their taste for the beautiful developed. The housing reformer is likely, however, to believe that he has liberally allowed for this working family's needs when he has arranged that they shall be housed in a seven-room tenement, fairly well supplied with light and air. The difference in the two views may represent a cost of at least a hundred thousand dollars. Who is to judge as to which estimate really represents needs rather than desires?

The only thing that we can be sure of is that, according to the judgment of almost any sane person, the country has always needed far better buildings than it has ever had. There is no probability that any of us will live to see the time when needs are filled. By this criterion,

just as in the case of desires, there must always be a great shortage.

But when people speak of a building shortage they are not referring to a permanent condition; they are thinking of something unusual. Evidently, then, they must have in mind some other standard of comparison. They will probably tell you that what they mean is that the supply is less than the demand.

Such a condition of affairs can exist only under unusual circumstances. In a free market, the price always adjusts itself almost immediately to the point where demand and supply are exactly equal. Only in cases where prices are fixed by law or contract can demand actually outrun supply, for it is only in such instances that the price cannot adjust itself to bring about the normal equilibrium. Such cases may, however, exist. For example, the fixing of the rent for a certain type of house at \$50 per month may put an absolute stop to the construction of houses of this class. Under these circumstances there might easily be three persons desiring to lease each house offered for rent. The situation would be analogous to that applying to the sugar market during the recent war when a family could obtain only two pounds of sugar per month even though they were willing to pay thrice the legal price of ten cents per pound.

It is impossible to measure any excess of demand over supply which may exist. It is, however, feasible to make another comparison which seems to have a significant bearing on the possible existence of a building shortage; namely, the relationship of the amount of building taking place during the last few years to the normal volume of construction.

The most obvious procedure is to measure the value per capita of the buildings that have been constructed in recent years. In making this computation, it seems logical to include only private building, for most of the construction for the Federal Government added nothing to the supply of buildings required to meet the ordinary business and residential needs of the country. It is obvious also that it is absolutely essential to eliminate that gain in

the nominal value of construction representing merely the rise in the general price level, for the building requirements of the nation are measured in terms of physical units rather than in value. This last mentioned purpose is easily accomplished, with a reasonable degree of accuracy, by dividing in every instance the value of construction during the year by a price index representing the changes in the average of building costs for the corresponding period.

At first thought, the logical method of finding out whether the amount of building is above or below normal would seem to be to ascertain the changes which have taken place in the per capita volume of construction. A little reflection, however, soon convince one that this method is fallacious. The chief reason for erecting buildings is not that the people may be better housed. As a matter of fact, although the quality of residence has distinctly improved during the last century, it is probably true that the average city family today occupies materially less space than did the average household of a hundred years ago. The typical business man of the present time has a much

more convenient but not a more spacious office than his great-grandfather had. The cost of factory buildings per man employed is doubtless somewhat greater than in the early days of the nineteenth century.

But, after all, the increase during a hundred years in the per capita building supply has not been at all startling. This means that buildings have been mainly constructed for one reason only—to meet the needs of the new members added to our population. A million new families need, among other types of construction, not only a million houses in which to live, but also new railway facilities to carry their produce to market and bring them supplies, new trolleys to take them to and from their business, new buildings in which to work, new factories to turn out the products which they consume, and new barns to shelter the animals which help to feed them. Such, apparently, are the needs that are responsible for the bulk of the new building, and it seems reasonably certain that, if the population of the country were stationary, there would be no building problem of great moment.

A ROUGH ESTIMATE OF THE TOTAL AMOUNT OF PRIVATE BUILDING CONSTRUCTION IN THE CONTINENTAL UNITED STATES AND ITS RELATION TO THE NORMAL VOLUME

A	B	C	D	E	F	G	H	I	J
Year	Money Cost of Buildings ^a in Millions	Index of Construction Costs ^b	Cost of Buildings at Prices of 1913 (Millions) B ÷ C	Improvements Demanded by Existing Population ^c (Millions)	Improvements for Additional Population (Millions) D - E	Increase in Population (Thousands) F - G	Construction per Person Added to Population (Prices of 1913) F ÷ G	Normal Construction in Millions at Prices of 1913 For Addition to Population. 1,306 × G	For All Purposes. E × I
1909	\$3,320	.936	\$3,545	\$904	\$2,641	1,431	\$1,847	\$1,870	\$2,774
1910	3,106	.965	3,218	922	2,296	1,859	1,233	2,430	3,352
1911	2,974	.965	3,080	938	2,142	1,582	1,355	2,069	3,007
1912	3,171	.985	3,219	953	2,266	1,527	1,484	1,994	2,947
1913	2,870	1.000	2,870	973	1,897	1,940	978	2,537	3,510
1914	2,620	.977	2,681	992	1,689	1,916	881	2,504	3,496
1915	2,692	.987	2,725	1,004	1,721	1,234	1,395	1,612	2,616
1916	3,427	1.115	3,073	1,017	2,056	1,294	1,589	1,692	2,709
1917	2,443	1.333	1,832	1,030	802	1,337	600	1,748	2,778
1918	1,460	1.449	1,008	1,042	34	1,123	31	1,469	2,511
1919	4,350	1.649	2,635	1,048	1,587	665	2,385	869	1,917
1920	4,750	2.319	2,051	1,066	985	1,800	547	2,351	3,417
Total					\$20,048	17,708	\$1.132	\$23,145

Estimated Building Shortage in Millions at Prices of 1913 = \$23,145 - \$20,048 = \$3,097.

Estimated Building Shortage in Millions at Prices of April, 1921 = \$3,097 × 1.94^d = \$6,000.

(a). Estimated on the basis of the building permits in the leading cities and the F. W. Dodge Company reports of contracts let.

(b). An average of the prices of building labor, building materials, and metals, the weights used being, in the order named, 3, 2 and 1. Data from

reports of United States Bureau of Labor Statistics.

(c). Assumed to be \$10 per capita per annum at prices of 1913.

(d). Rough estimate of price index of building costs for April, 1921.

Since, then, we build primarily because our population grows, it follows that the correct method of ascertaining whether or not the volume of building in any year has been above or below normal is to compare it with the increase in population rather than with the total number of inhabitants. The accompanying table represents an effort to eliminate all but the essential factors in order to arrive at the truth in this connection.

Column D shows that the construction work of 1919 and 1920 was not record breaking (as the figures in Column B apparently indicate), but merely appeared to be large because it was measured in terms of cheap dollars. When the fictitious gain due to price inflation has been eliminated, it is made clear that the last four years have shown, instead, an abnormally low record for private building construction. Column E represents a rather arbitrary allowance of \$10 per annum per capita to cover the improvements in buildings due not to the growth in population but to the advance in civilization. This may be either an over or under allowance, but moderate changes in this column will not greatly affect the final conclusions. Column G shows how irregular has been the increase in the number of inhabitants during the decade, the variations being due to changes in immigration and, in the last two years, to the effect of influenza upon the death rate.

A study of Column H leads to the conclusion that, in the years preceding 1917, the average construction per person added to the population was about \$1,306. If this average is multiplied by the increases in population for the respective years, we arrive at the figures entered in Column I, which show the amount of building that would have been constructed to meet the needs of population growth had the customary rate been adhered to. It is, of course, true that the period when the building actually occurs is likely to lag behind the date of the accessions to the population; hence little significance can be attached to the relation between the quantities and the particular years with which they are connected, but the general

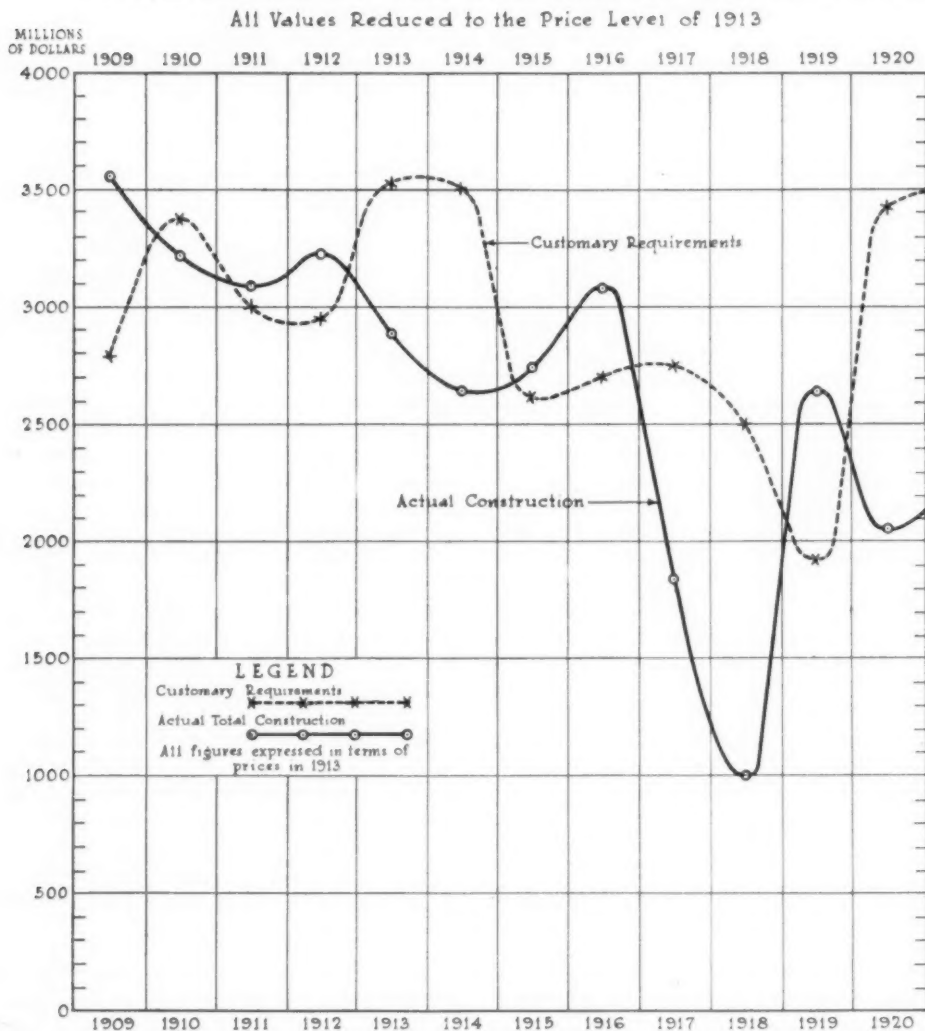
tendency is probably portrayed with considerable accuracy.

Column J combines the quantities in Columns E and I, and thus shows the total customary building requirements of the nation. In the accompanying graph, this quantity representing usual demand is compared with the actual amount of construction which has taken place. The total excess of the customary requirements over the cost of all buildings erected is apparently about three billions of dollars when measured at the price level of 1913, or about six billions of dollars at the current costs of construction. This shortage, which represents a quantity somewhat greater than the full building program of a normal year, is considerably less than the estimate of some students of the situation, but they have apparently failed to consider two facts; first, that building is primarily necessary because of additions to the population; and second, that during the five years following 1914 the increase in population was unusually small.

The six billion dollar building shortage is apparently all a result of the war and the currency policies growing out of it. In 1917 and 1918, the building energies of the nation were mainly absorbed in making munition works, camps, and ships. The abnormal demands for these war purposes pushed the prices of building materials well above the average price level, while rents, being largely controlled by custom and contract, utterly failed to keep pace. Under such circumstances, building for private needs became an unprofitable enterprise.

Since residence rents have been less flexible than business rents, the greatest shortage has accumulated in that field. Old apartments have been divided, new houses have been reduced in size, and families have doubled up, and in this way the existing residences have sufficed to house the population. It may be that people will become accustomed to their cramped quarters and that part or all of the shortage will never be made up. It seems more likely, however, that the old standards of demand will to a considerable degree reassert themselves. The

THE ESTIMATED ACTUAL VOLUME OF PRIVATE BUILDING AS COMPARED TO THE CUSTOMARY REQUIREMENTS OF THE PEOPLE OF THE CONTINENTAL UNITED STATES



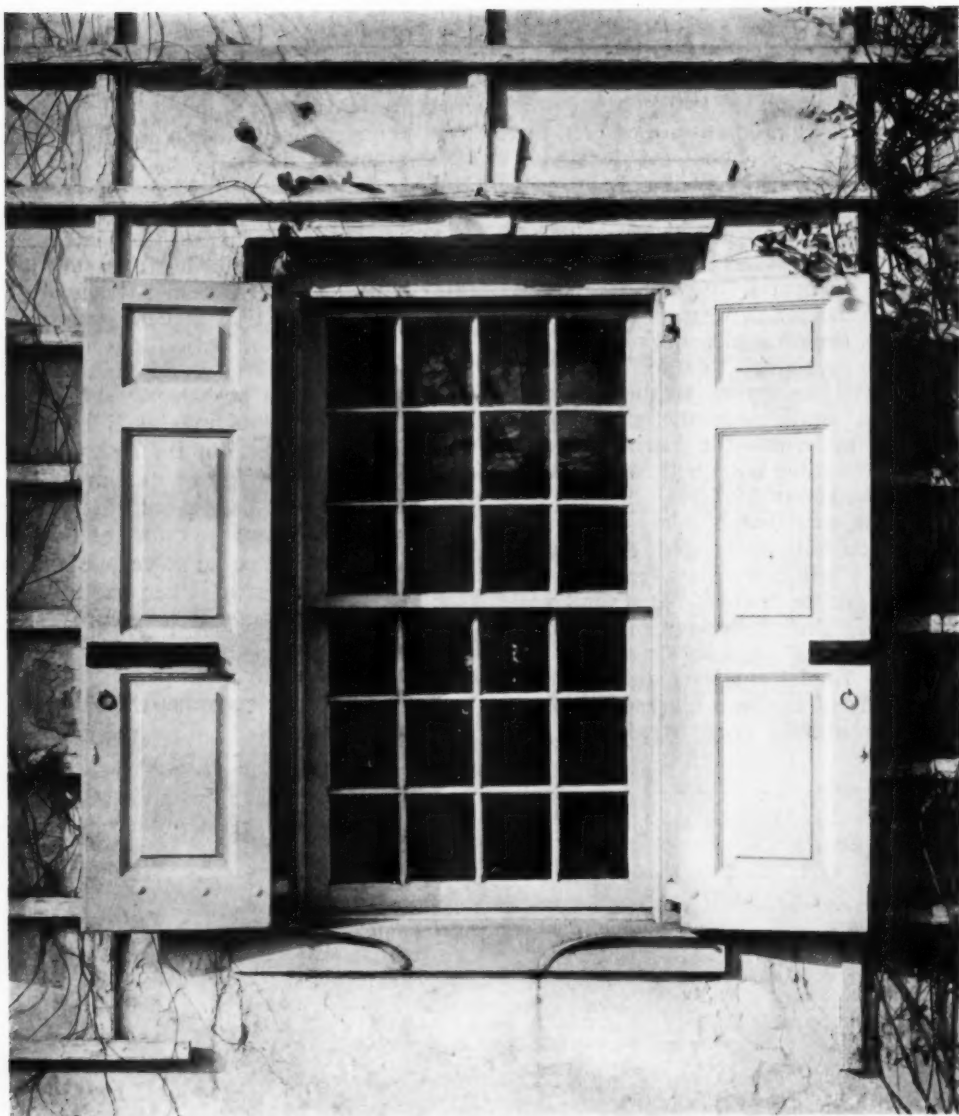
constant agitation in connection with the housing issue indicates that it is improbable that equilibrium has been reached on the new standard.

If the above premises are correct, there is reason to expect that the demand for building construction will remain strong for several years to come and that this demand is likely to hold the prices of both materials and labor at levels relatively high as compared to that of average prices. Though, as forecast in the earlier chapters, the price of materials is still declining, and though this decline is likely to proceed somewhat further, it seems probable, considering the stage of the business cycle, that the downward movement of building costs will come to a halt before the end of 1921.

On the other hand, unless the customs of the people have changed, the residence shortage will probably prevent any marked decline in rents for several years to come. During periods of unemployment, labor is noticeably more efficient. All the fundamental conditions except the status of the loan market are, therefore, apparently becoming favorable to

the builder. Even in the case of the money market there has already been a noticeable fall in rates, and it will be surprising if loans for building purposes do not become easier to obtain and if interest rates thereon do not decline somewhat further before the trough of the present economic cycle has passed.

It is, of course, impossible to foresee what the future may bring forth, but the forces now at work seem to show that the latter part of 1921 and the early part of 1922 will be a period offering unusual chances of profit to the builder who is in a position to push his work at that time. The real building boom is more likely to occur later, for the rush usually comes after the period of maximum opportunity for gain has passed. However, the man who follows the crowd and waits until the experience of everyone about him proves that gain is certain, usually finds to his surprise that he secures only experience as his reward. In the building field, as in many other phases of life's activity, it is distinctly better to be too early than too late.



WINDOW OF "WYCK,"
GERMANTOWN, 1690.

The EARLY ARCHITECTURE of PENNSYLVANIA

PART VII - WINDOWS AND SHUTTERS



By A. LAWRENCE KOCHER

A FINELY textured stone or brick wall with a graceful and correct cornice and a successfully conceived doorway will avail but little in domestic architecture without the aid of well proportioned window openings. Much of the individuality as well as the enduring attraction of the Pennsylvania style can be traced to the unaffected charm of the window design accented by the accompanying white and green shutters. The simplicity of the building contour together with the balanced symmetry of mass contributed to make a restrained and rectangular type of sash a necessity.

The relatively late date of the Pennsylvania colony precluded the general use of casement windows, although the sliding and hinged sash were not unknown in either the English or German settlements. Pastorius built a house in Philadelphia before he laid out the site of Germantown in 1685. The windows of this modest habitation he describes as "casements"—which for want of glass were set with oiled paper. The log-cabins which preceded the substantial and more permanent dwellings were, as a rule, fitted with windows consisting of single frames placed in grooves so that they could be opened by sliding to the side. Both of these forms were soon supplanted by the more practical double sash, a device which permitted ample ventilation when open and which did not occupy undue space.

There are problems in design definitely associated with the double sash window. In the first place, it is more difficult to treat successfully than the mullioned form because it must be approximately alike in height and width at each floor level; the mullioned aperture can be of varied dimensions and with a glass size higher or lower, as the case may be, without

doing injury to appearances. In addition, the former type of opening made a systematic regularity of spacing imperative, while the latter called for an informal and more haphazard arrangement. With the double sash the shape of openings and of glass must be alike on all parts of the exterior, and the proportion of voids should be made to accord with the building outline.

The similarity of window sizes in the many extant examples of eighteenth century buildings would encourage us to infer that rules were followed with regard to determining window shapes. Isaac Ware in his "Complete Body of Architecture" (1756) specifies that the height of windows should be "twice the breadth." An exception is cited in the case of the attic story. "As rooms are lower in the chamber floor than in that below, the windows should be lower; therefore, instead of twice the breadth for height, the best measure for these is the diagonal, which is once and a half the breadth." "This," he adds "is what the builders express by the name of a diagonal window." It is of interest to note that a literal observance of this formula was made on the façade of the city residence of John Reynolds at 225 South Eighth Street, Philadelphia, better known as "The Morris House."

Windows were deemed a means of attaining an external effect and only in a secondary sense was their purpose to admit light where needed. The medieval method of planning houses with windows where wanted had passed away. Balance and regularity was the keynote of the new order. A writer, touching upon the appearance of the early architecture of the province, speaks of the houses as tiresome and as monotonous of mien as the squares of a checker board. In time the

outward semblance of the dwellings underwent a change. The character of the architecture was altered with the increase of prosperity that ensued from the successful farming and trading ventures of the colonists. In the cities and thickly settled districts along the rivers and post-roads, a more carefully considered and more formal type of house with Palladian windows appeared. This motive, once adopted, occurs with increasing regularity until the end of the century. The Palladian window is pretentious and, says a writer of the times, "of a kind calculated for shew, and very pompous in its nature; and when executed with judgment, of extreme elegance." A noteworthy specimen has already been referred to on the second story of Mount Pleasant Mansion in Fairmount Park, Philadelphia. Similar in form, but differing in the character of its constituent parts, is the splendid example, illustrated in this issue, from Woodlands, in the same city. Christ Church, Philadelphia, offers

a larger use of the motive, mounted on a stone base and enframed between brick pilasters. This particular window compares very favorably with the best fenestration of the Georgian Period in England.

The guiding influence of hand-book regulation is not entirely clear when a study is made of the proportions and disposition of this variety of window. Let us examine a favorite source of information for the period. Ware states that "Venetian (Palladian) windows take their proportions from the middle aperture, whose height should always be twice and one-half its breadth. Being divided into three parts, sometimes one of those three parts is found convenient for the side openings; but where a considerable body of light is wanted, two must be given to the breadths of the side apertures. It is a common practice and a common error to make the side openings one-half of the middle; and this is attended with great inconvenience in dividing the sash



DETAIL OF WINDOWS, 514 SOUTH WATER STREET, PHILADELPHIA.



WINDOW OF CHEW MAN-
SION, GERMANTOWN, 1763.

squares; the principal light should be divided into three parts, for the square and the side lights should be either one or two of those parts; but where a very large Venetian window is required, another proportion, different from these, may take place: let the middle void be divided into five parts, two of which give to each of the sides, and the squares will be all equal."*

This window in the central colony invariably discloses an observance of the rule that "the height of the middle aperture should be twice and one-half its breadth." However, the mode of dividing the side lights, in Pennsylvania, reveals a departure coming under what Isaac Ware terms "the common practice and common error," for the majority of existing specimens have a side width that approximates one-half of the central aperture. This is the case with Mount Pleasant, Port Royal, the Old State House, and Woodlands. Woodford alone has followed the quoted requirement. The illustration on page 535 is from the hand book of Owen Biddle, published in Philadelphia in 1805 and is likewise in conformity with the theory of Ware.

It would seem that the chief items of importance are that the side lights should be composed of units of glass that are similar to the size of the central panes and that the height of the entablature should be equal to the height of one or two panes so that the sashes in the side windows will range with the middle one.

Window casings in stone and brick walls of dwellings are most often molded at the outer edge; each side was shaped from a solid piece of oak or other hard wood, pegged together with wood pins. This is a system of fastening that warded off decay. The outer face of the frame was placed almost flush with the external surface of the wall, or approximately one inch. This produces a wide inside window sill within the thickness of the masonry walls. The inner window jambs and soffits are most often paneled and somewhat similar to the treatment illustrated for the William Maclay House in

Harrisburg, page 530. There is some sacrifice of external appearance with this arrangement in that the slight reveal produces a flat and unsubstantial effect. An act was passed by the English Parliament in 1709 which specified that no door or window frames were to be set nearer to the outside face of the wall than four inches. Such a practice was next to impossible in the Colonies because the frame served as the support for the shutters. It was necessary that the casing be almost flush with the outside face of the building to enable the shutters, attached to the frame, to swing out and against the wall.

A variety of ways was followed to span window openings in masonry walls. In some cases the heavy frame itself was entrusted with the burden of stone or brick above. In other instances a flat arch of separate stones was resorted to as in the beautiful window from the Chew Mansion, Germantown. Lintels of single stones, sufficiently long to span the opening, were of common occurrence and very satisfactory. The stone lintels were invariably placed so that the cleavage seams run vertically, on account of the greater strength in this position. In some places there are lintels of wood whose face is cut in imitation of stone blocks. The segmental brick arch was used above the basement and first story windows and doors of Stenton, Philadelphia. The thoroughgoing manner in which walls were constructed is evidenced by the rare occurrence of cracks above window voids.

Window glass was a luxury during the early years of Pennsylvania history. In its place, oiled paper and skins of animals were of frequent occurrence and filled the double duty of admitting light and excluding the severe weather. The use of oiled paper as a substitute for glass does not seem to have ended before 1815.

The manufacture of glass in Pennsylvania was attempted from the very founding of the colony. William Penn, in an account of his settlement, written for the Free Society of Tradesmen in 1683, refers to the glass houses, "conveniently posted for water carriage." These initial endeavors proved unsuc-

* Isaac Ware, "Complete Body of Architecture," Bk. 4, pp. 467.



WINDOWS OF FARM-
HOUSE NEAR READING, PA.

cessful, perhaps because of the technical difficulties involved in the process of kiln burning and glass blowing.

There are several circumstances which encouraged the production of glass here. The chief encouragement arose from the presence of an abundance of suitable nat-

the glass industry of the province. William Stiegel was a native of Mannheim, Germany, who migrated to Pennsylvania in 1757 with "good recommendations and a great deal of money." He was of an ambitious turn of mind; for, upon an estate of seven hundred and fourteen acres

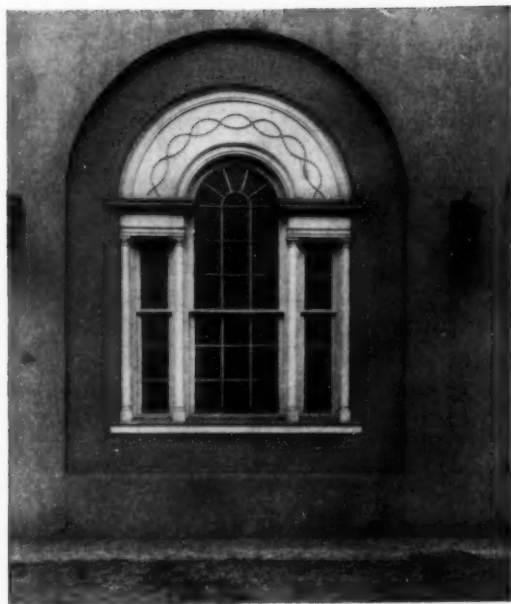


WINDOW OF THE DE TURCK HOUSE, NEAR FRIEDENSBURG, 1767.
Characteristic "Pennsylvania Dutch" Ornament on Panels.

ural materials in many parts of the province. There was, in addition, a general demand for window glass. Glass trinkets were in demand as a medium of currency in trade with the Indians. When Melchior Mühlenberg set out into the wilderness to gain converts and to encourage industry, he was equipped with a goodly supply of "glass trifles." Pendent glass was also much favored for the adornment of candlesticks and oil lamps.

The name of William Stiegel (known as Barron) lends an air of romance to

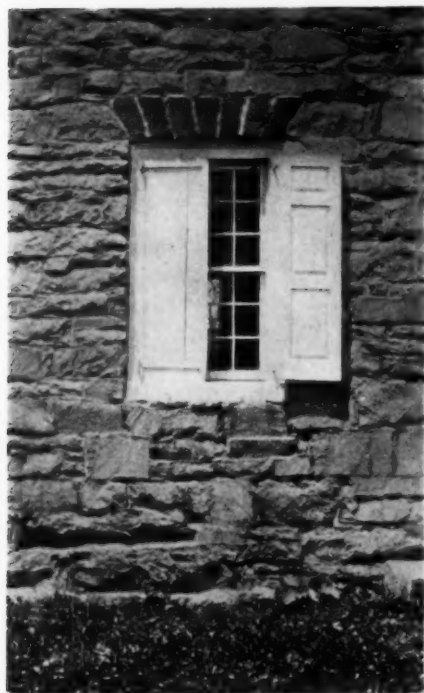
in Lancaster County, he laid out the town of Manheim, and established extensive glass works. He imported glass workers from the Old World and began the production of window panes and made a varied assortment of glassware. Here he lived in an extravagant style; having built a magnificent mansion, with an elaborate scheme of rooms, embellished with wainscoting, cornices and tapestried walls, he surrounded himself with a retinue of servants and drove a "coach and four."



PALLADIAN WINDOW, YORK DISTRICT.



WINDOW, FRONT STREET, HARRISBURG, PA.



WINDOW DETAIL OF "PEACE CHURCH,"
SHIREMANSTOWN, PA.



WINDOW FROM DWELLING IN QUAKERTOWN, PA.

CHARACTERISTIC WINDOWS OF THE MIDDLE COLONY

From his early correspondence, we conclude that he must have attained an assuring degree of success, for he writes a friend that his glass works alone brought him five thousand pounds a year. The number of new ventures that he entered

An idea of its cost can be gleaned from the appraisal of the personal property of Samuel Wallis, November 20th, 1798. Mention is made of "72 panes of window glass at eight pence; 500 bull's eyes at three pence each." The bull's



WINDOW OF CHAMBERLIN HOUSE, MILTON, PA.

upon were his undoing and he was forced to close his glass factory in 1774.

The first successful attempt to establish an industry for the manufacture of window glass in the Pittsburgh district occurred in 1795. This was the forerunner of the important glass trade that has continued until the present day.

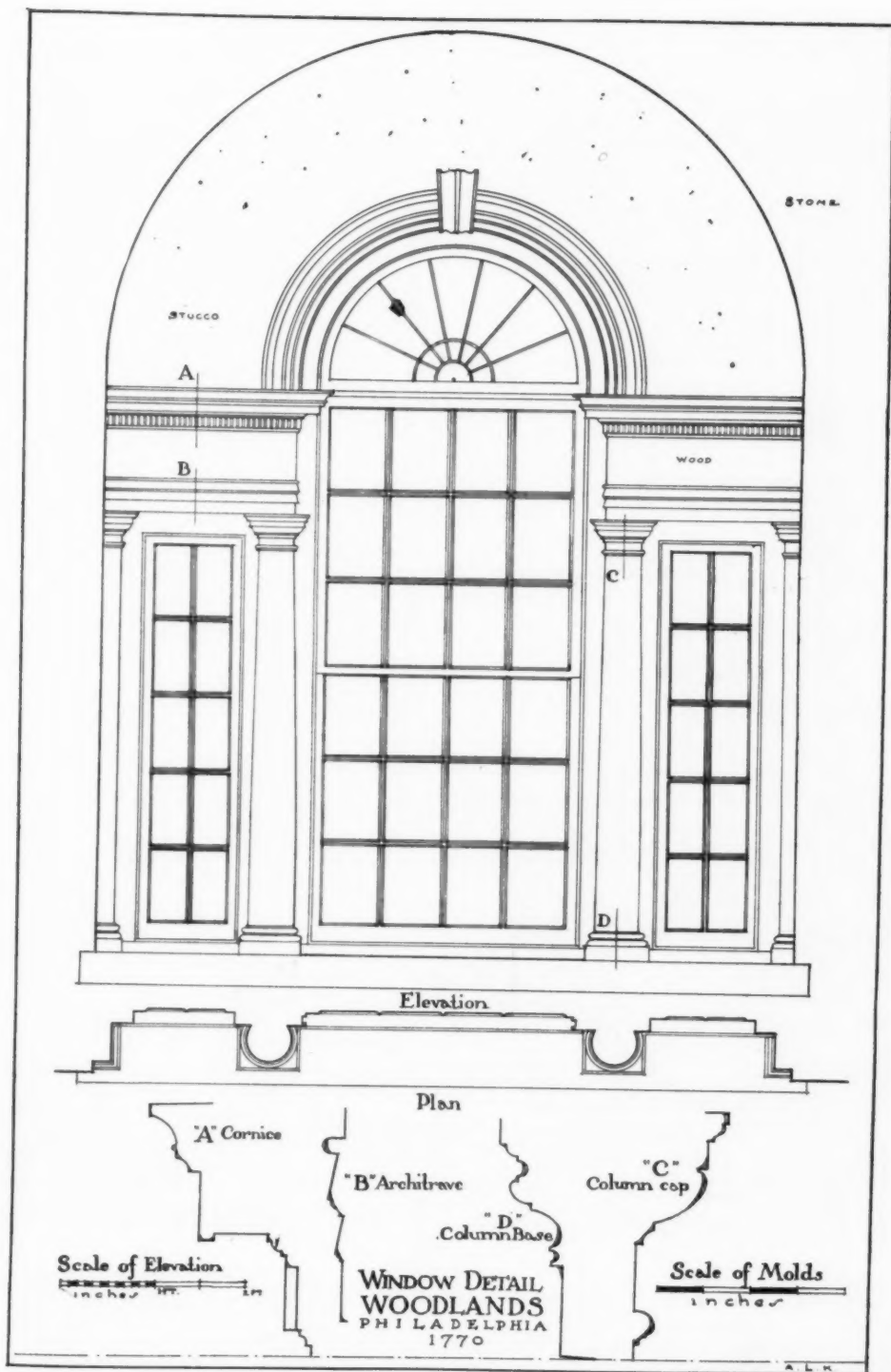
The price of glass declined toward the end of the century, following upon the growing success of local manufacture.

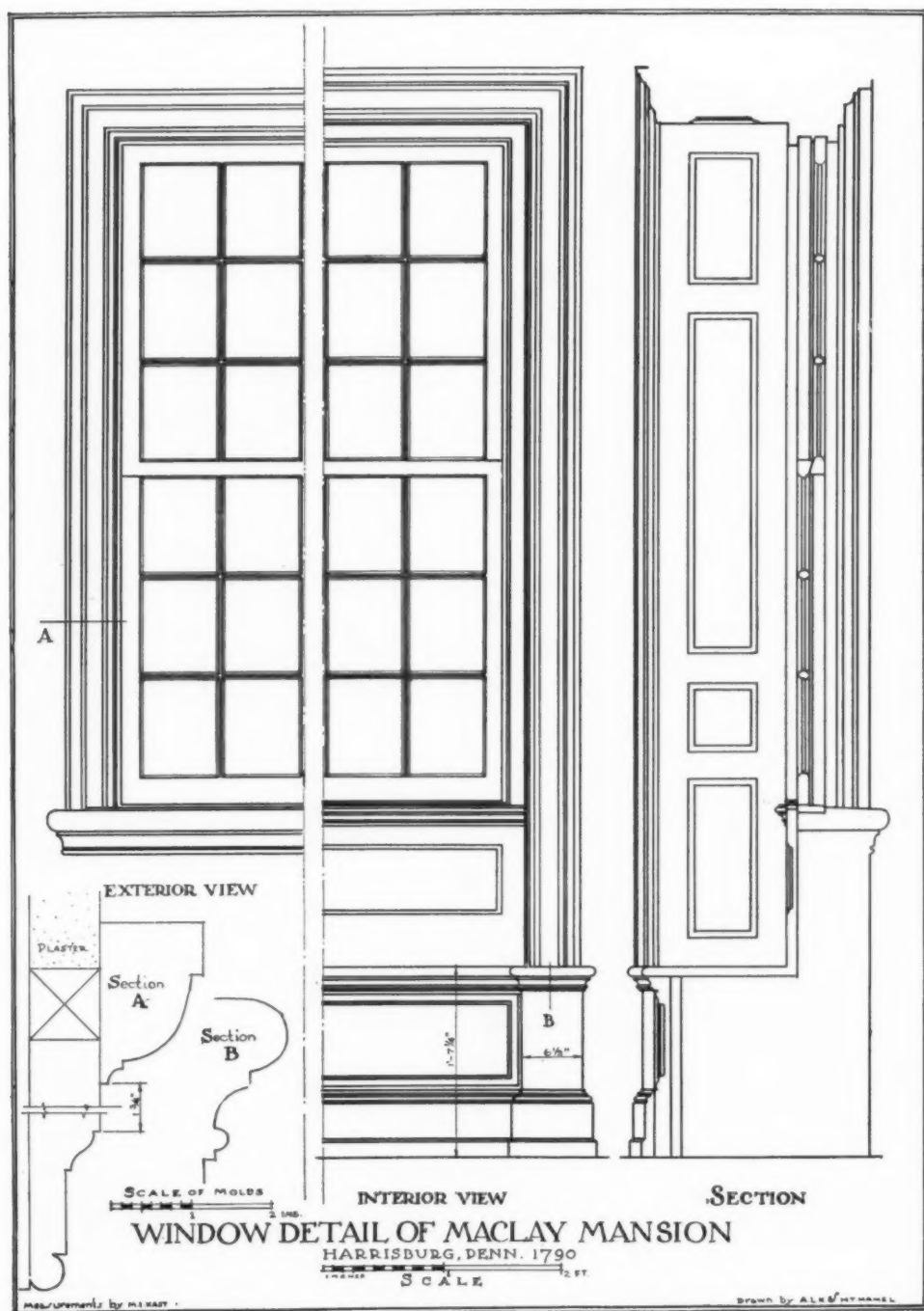
eyes were heavy panes of glass, approximately 7 inches by 7 inches square, and varying from $\frac{3}{16}$ of an inch in thickness at the edge to $\frac{3}{4}$ of an inch in the middle. The variation in thickness was due to the whirling of the molten material before casting. This also accounts for the cylindrical rings upon the surface. The glass was a pale green color, and, although very clear, it magnified slightly.

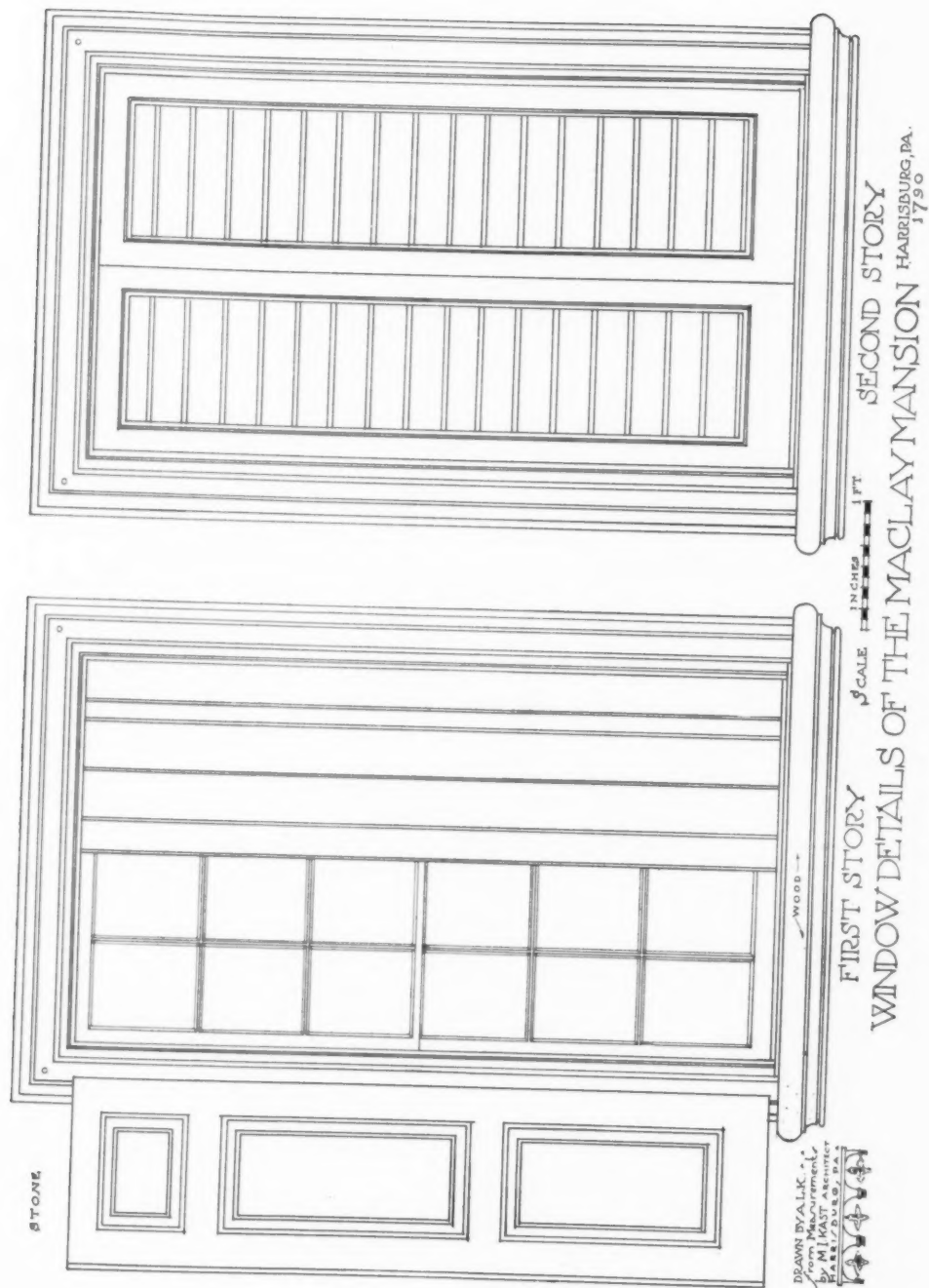
Certain parts of the early common-

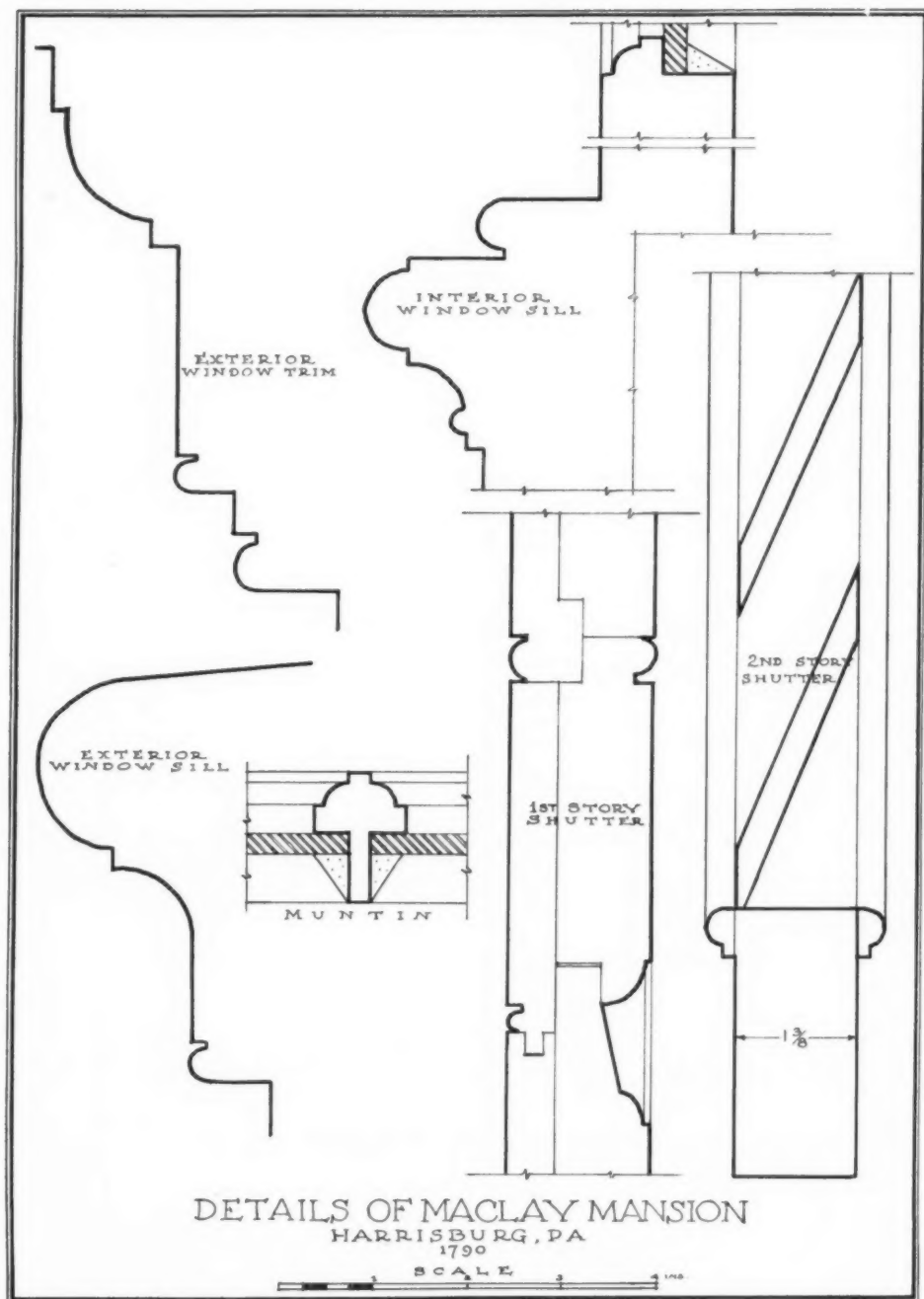


DETAIL OF PALLADIAN WINDOWS, "WOOD-
LANDS," FAIRMOUNT PARK, PHILADELPHIA, 1770.









wealth imposed a window tax proportioned to the number of window lights that a house possessed. Tunison Coryell, in his autobiography, relates that during the year 1803, while living near the Susquehanna River, the assessor would count the panes of glass and accordingly figure the tax. Certain frugal housewives, upon hearing of his approach, would hurriedly remove the glass and substitute oiled paper in its stead until after the returns were made.

This means of raising revenue was probably inherited from Europe, where it continued until a late date. The window tax of England was not abolished until 1851.

The earliest glass of the colony was of small size and set in metal frames with lead muntins. No examples of this form remain. The first wood sash were considered heavy and clumsy in appearance and met with some opposition. The large panes, six by eight and eight by ten inches in size, were especially the objects of ridicule. When Governor John Penn set an example among the first home-builders by adopting the relatively large panes, his sister-in-law chided him in the following verse:

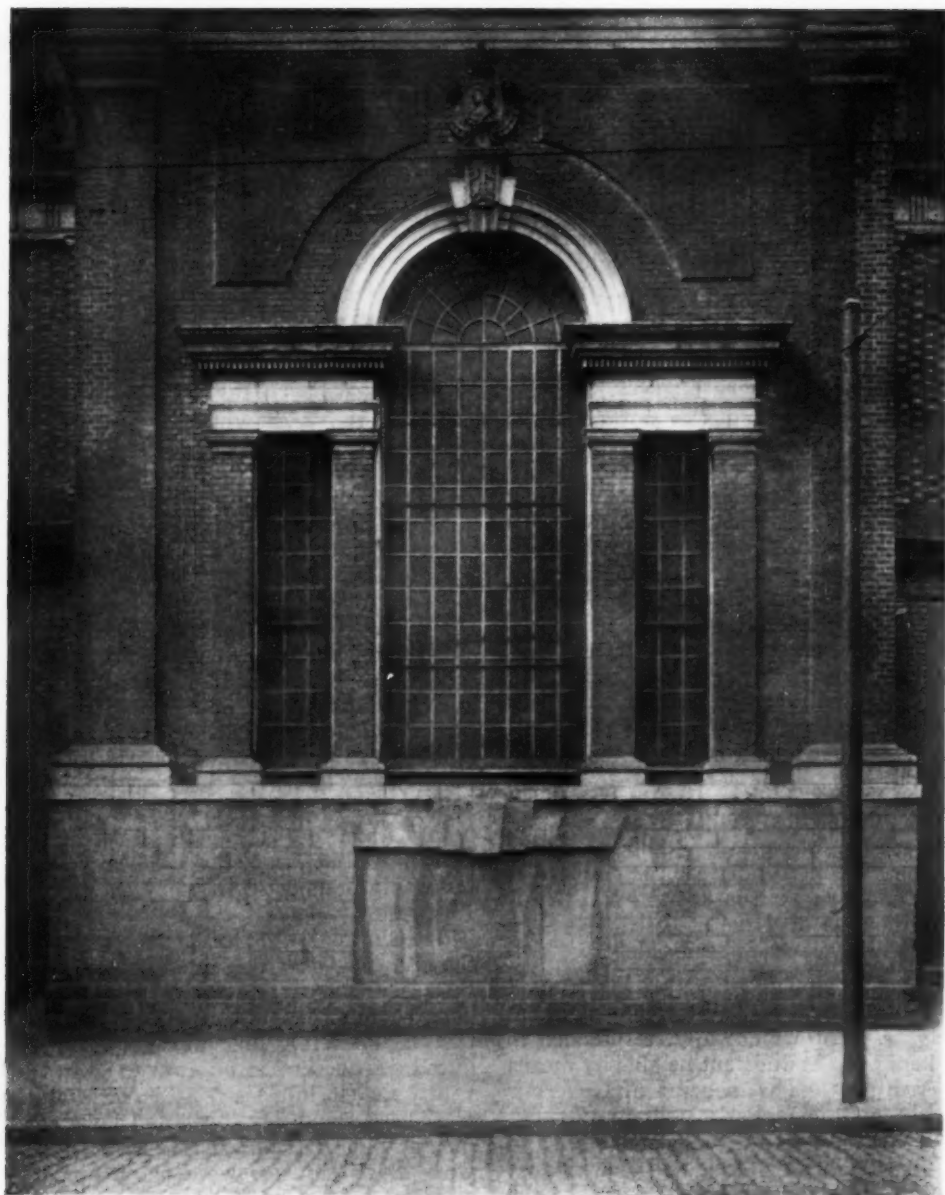
Happy the man in such a treasure,
Whose greatest panes afford him pleasure;
Stoics (who need not fear the devil)
Maintain that pain is not an evil;
They boast a negative at best,
But he with panes is really blest.

The first double sashes were mounted in grooved frames and operated without weights. The windows were intended to be kept open at different heights by means of sash-pins. The mansion of Governor Keith at Graeme Park, built in 1721-22, was, perhaps, the first house to be equipped with weighted windows. Thomas Chalkley, in 1724, advertised the sale of "Windows Ready Painted, Glazed and Hung with Choicest Lines and Pulleys," at his store in Philadelphia. The windows of the time were so made that only the lower half was hung, while the upper part could be removed entirely when necessary.

Shutters were objects of adornment as

well as of utility. They served to protect the dwelling against invasion by the unwelcome Indian or the undesirable white. The painted woodwork of shutters, backed by the warm red of brick or the variegated texture of stone or stucco, was a distinguished element of adornment. Remove the shutters from the colonial house and you subtract a chief source of delight that the rugged fabric affords. In no country was the shutter so important a part of domestic architecture as in America. It was but rarely used in England or France and it was never commonplace in Sweden, Holland or Germany. Certainly the development here was independent of the mother countries, for it resulted from stern necessity. More unmistakably than with any other architectural feature, it reflects the progress of pioneer American civilization from the frontier log cabin to the stately mansion era that followed the Revolution. When the pioneer home-seeker pushed westward, his home was his castle (without figure of speech) for it was necessary to protect it by heavy doors and strongly barred windows. Shutters of oak, two and one-half inches thick, were not uncommon. They were built either with a solid piece of timber or were fashioned with battens on both sides. When the Indian peril had vanished the heavy shutter was gradually replaced by the lighter form.

The shutter, as we know it, comes from the end of a development. Its effectiveness is not a part of its fortifying purpose so much as it consists of the fact that a contrasting note of color is introduced. The shutter appears to best advantage when in close relation with white marble sills and keystones and light cornice and door trim. The varied shades with which shutters were painted added an air of gaiety and harmonized well with the colors of the stone or brick. There was a tradition, closely followed, which stipulated that the upper shutters should be louvered and painted a shade of green, while the lower ones were to be solid and painted white. The blue-green color which we so much admire to-day is believed by some to have been the gift of



PALLADIAN WINDOW, CHRIST
CHURCH, PHILADELPHIA, 1727-35.

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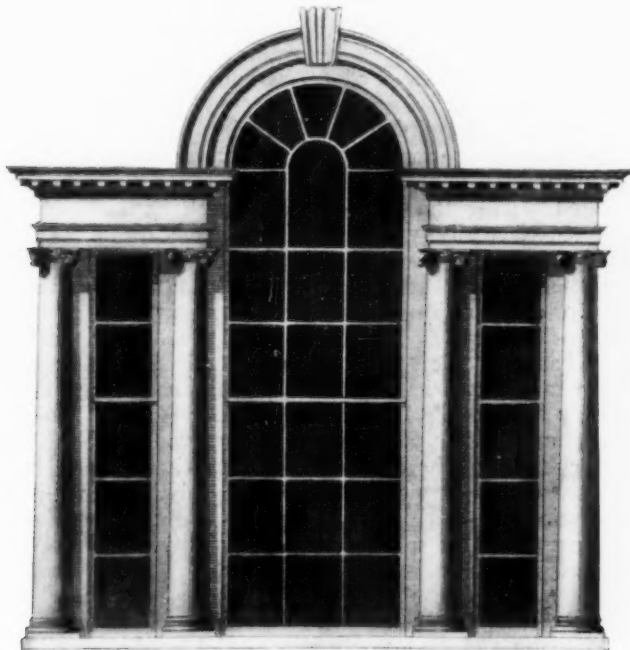
time. In other words, it is thought to have been originally a brilliant oxide of copper or Paris green—which was the only cheap green available at the time—and that weathering altered the shade to a more pleasant hue.

The shutter became, in time, a feature of almost standard design and construction. When closed it fits snugly within the oak window frame, exposing the plain, board-like surface; relieved alone by the heavy iron hinges and fasteners. When opened, the paneling of the inner side is pleasantly revealed. As a rule, three panels—two large and one small—divide this face. The proportion of the large panels approximates, by chance, the ratio of the window opening. No earnest attempt seems to have been made to arrange the rail between the two large panels so as to continue the line of the meeting rail of the window. The exceptional cases where this was done resulted from the placing of nine panes of glass above and six below. The window from Quakertown has this division.

The shuttered window of the De Turk House is unique with its two panels and decoration consisting of painted tulips and bell-flowers. It recalls the Pennsylvania Dutch painted chest and the local slip-pottery and peasant furniture.

The oldest windows have muntins as wide as an inch and a quarter, but later the bar becomes thinner until it approaches the smallest dimension that is compatible with reasonable strength—a width of scarcely three-quarters of an inch.

The necessary fittings for the adjustment and operation of windows and shutters were the objects of the local blacksmith's special skill. The straightforward methods that characterized the solving of construction problems were applied to the making of the window hardware. Primarily utilitarian, they were also beautiful. In the simple hammered hinges and the graceful shutter fasteners there was no conscious striving after effect and the iron was wrought with a proper regard for the proprieties and limitations of materials.



DRAWING OF VENETIAN (PALLADIAN) WINDOW FROM
"THE YOUNG CARPENTERS' ASSISTANT," BY OWEN
BIDDLE, PUBLISHED IN PHILADELPHIA, 1805.

ARCHITECTS REQUESTED TO TRAIN EX-SERVICE MEN

By J. W. JEFFERIS

THE Federal Board for Vocational Education is engaged in training disabled ex-service men for the profession of architecture in the principal schools and colleges of America. About forty of these men are enrolled as students in educational institutions of New York City. The article which follows sets forth the conditions under which architects may obtain the services of apprentices. For further details, address Mr. Uel W. Lamkin, Director, Federal Board for Vocational Education, 200 New Jersey Avenue, Washington, D. C. Architects located in New York City should address inquiries regarding the availability of trainees for apprentices to Mr. Wm. J. F. MacMillan, Supervisor of Building and Allied Trades, Penn Terminal Building, 370 Seventh Avenue, New York, N. Y., telephone Longacre 6240.

The problem undertaken by the Federal Board for Vocational Education—that of furnishing vocational training to approximately 75,000 ex-service men who have been handicapped by disabilities received or aggravated during the war—cannot be solved satisfactorily without the co-operation of the business and professional men of the country; and special appeal is made for co-operation on the part of architects.

The Board now has available men of practical education and experience in architecture, not only in New York City, where nearly forty men are enrolled as students, but in every State of the Union. Architects may secure the services of these men as apprentices without pay until their value to employers is satisfac-

torily established, when they receive \$12 and up a week, according to their ability.

In addition to vocational training at such institutions as Columbia, Pratt and Heffley, many now available for service in the offices of architects have had practical training and experience in estimating, drafting and other departments of the building trade, so that their status is by no means that of beginners, but of second juniors.

In June, three Federal Board trainees will complete the regular course in architecture at Columbia University. One of these men will avail himself of the special working privileges offered by the New York School of Fine and Applied Arts to study architecture in the Louvre, Musée des Arts Decoratifs, Musée Carnavalet, the Palaces at Versailles and Fontainebleau, and for visiting private collections in Paris, as well as many of the famous chateaux of France.

In addition to the trainees who are studying architecture at Columbia, Heffley and Pratt, about fifteen are in the East Side Y. M. C. A. Employing architects need have no fear that the vocational handicaps of these men will in any degree unfit them for the profession of architecture, as care is always taken to place men in such positions as they can fill to the highest advantage of themselves and of their employers.

In his recent message to Congress, President Harding summons the nation to a generous co-operation in the work of rehabilitating disabled soldiers. To this appeal the architects of the country will undoubtedly respond with prompt magnanimity.

To the
members
of the
Architectural
Profession?
So far we
have refrained
from telling
you to
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But, we
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If you are planning a home, you will be interested in knowing more about Redwood—why and where it should be used in your new home. Our Chicago office will be glad to send you this information. Write for Redwood Information Sheet No. 11, "Residential Building Materials."



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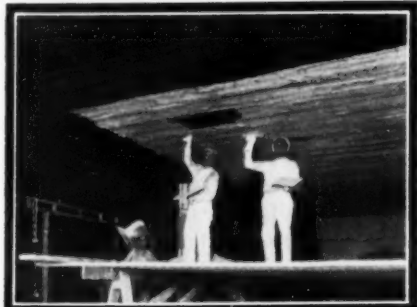
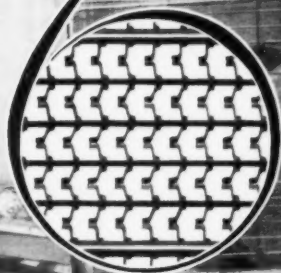
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This picture shows the living room of a house in which the Estey Organ is installed. Note the grille through which the organ is heard. Architects will find a pipe organ an interesting problem for their art, and all of the experience of the Estey Organ Company is at the disposal of any architect who wishes to recommend the Estey Residence Organ to a client.

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Thus, on one installation means was found to heat three buildings with boilers and fuel formerly inadequate to heat one. On another—a report on the opposite page—an enormous installation of 68 miles of oil, steam, water and gas piping was finished and the plant operating in just four months. On another, Grinnell Engineers pointed the way to heat 500,000 square feet of floor space by utilizing exhaust steam hitherto wasted.

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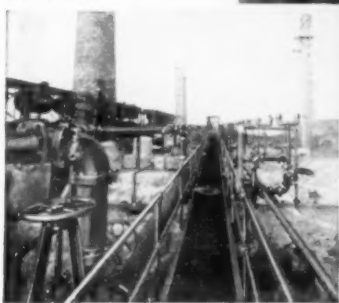
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Dramatized Facts out of The Day's Work

No. 4

Where the facts came from

Building the new New England Oil Corporation plant at Fall River, Mass., was a rush job from the first day. 68 miles of piping, covering 55 acres, were installed by Grinnell Company for the contractors, Unit Construction Co., St. Louis. When the piping was tested only six leaks were reported to Mr. W.W. Boyd, Jr., Vice President and General Manager of the New England Oil Corporation—6 leaks from 64,312 joints.



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PLANT ENGINEER

CONSULTING ENGINEER PRODUCTION MANAGER

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"The first tanker will dock here in just four months," declared the President, looking across the fifty-five-acre site of the gigantic new oil works. "By then we simply must be in full running order."

"And that includes piping," mused the Production Manager.

"It can't be done," exclaimed the Plant Engineer. Why, there's more than 68 miles of piping required here."

"I don't care if there's a hundred and sixty-eight," flashed the President, "this job's got to go through on schedule."

"But sixty-eight miles of piping—" the Plant Engineer came back, "high and low pressure steam lines, acid, air and water lines, besides connections to stills and coking plants—why there's over fifty thousand joints to make trouble."

The Consulting Engineer turned—started to reply. But again the President broke in—"Not more than four months, remember."

"All right," persisted the Plant Engineer, "but if you rush construction like that, you can figure on acres of leaky joints after the construction army is gone—"

"You're borrowing trouble, old man," smiled the Consulting Engineer. "I'll bet you a suit of clothes there won't be a hundred leaks in the whole job when it's tested."

"Only a hundred leaks in 68 miles of rush piping? I'll go you."

It was hardly a fair bet. For the Consulting Engineer knew the service he would get from Grinnell Company. And his confidence wasn't misplaced. The job was done on time, and after the test only six leaks were reported. He won his suit of clothes with ninety-four leaks to spare!

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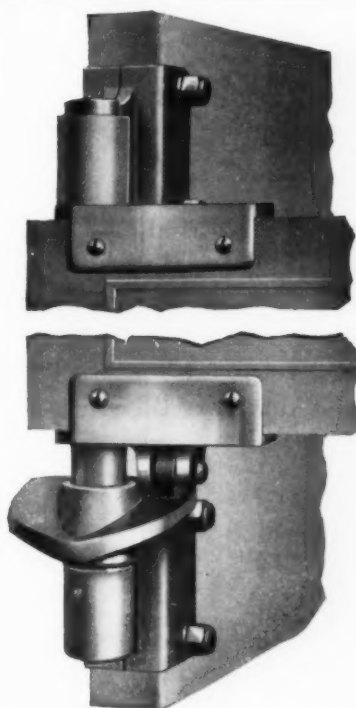
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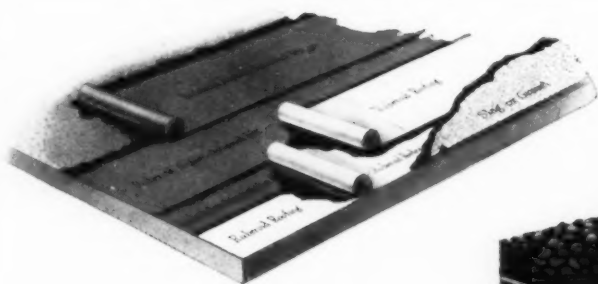
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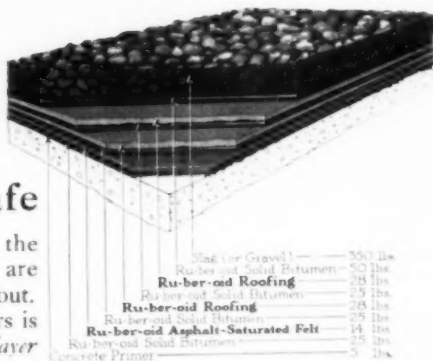
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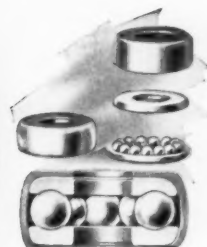
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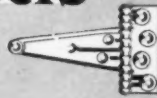
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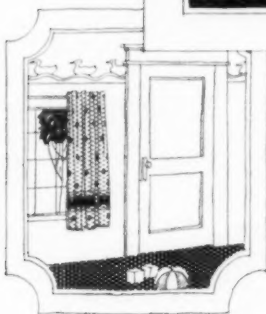
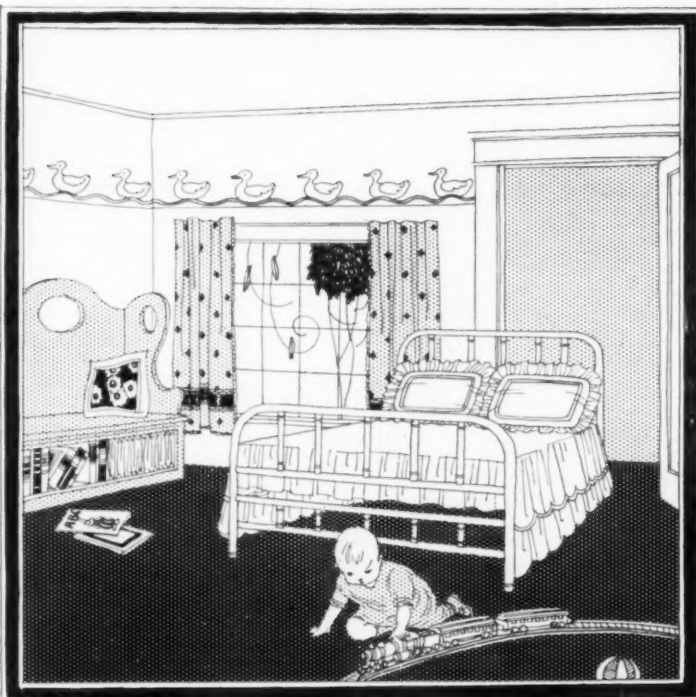


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phy has made possible in the home? Each room can now serve a double purpose—a nursery, den, sewing-room, sun-room or living-room by day—a sleeping-room by night. The Murphy In-A-Dor Bed is today one of the most important factors in home planning.

MURPHY DOOR BED COMPANY

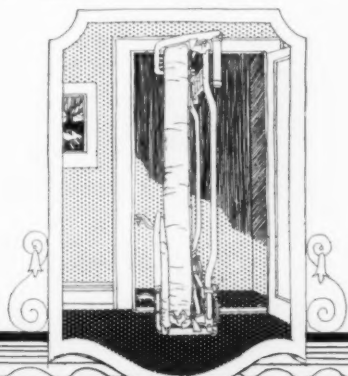
OFFICES IN ALL PRINCIPAL CITIES

22 West Monroe St., Chicago
Chemical Bldg., St. Louis
469 Fifth Ave., New York
1534 Blake St., Denver
912 Kresge Bldg., Detroit
205 O'Connor St., Ottawa, Canada

Crocker Bldg., San Francisco
1103 First Ave., Seattle, Wash.
1110-1142 Hanna Bldg., Cleveland
305 City Club, Kansas City
111 Murphy St., Dallas, Texas
201 Peach Tree Arcade, Atlanta, Ga.

The MURPHY IN-A-DOR BED

There is only one "In-A-Dor" Bed—"IT'S A MURPHY"

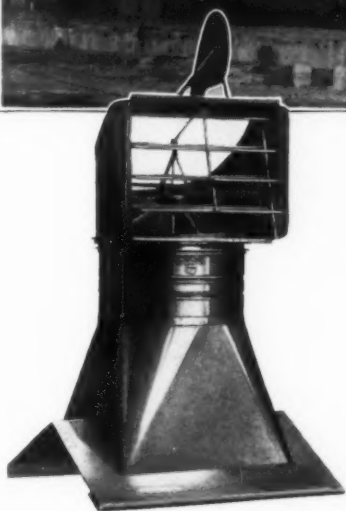
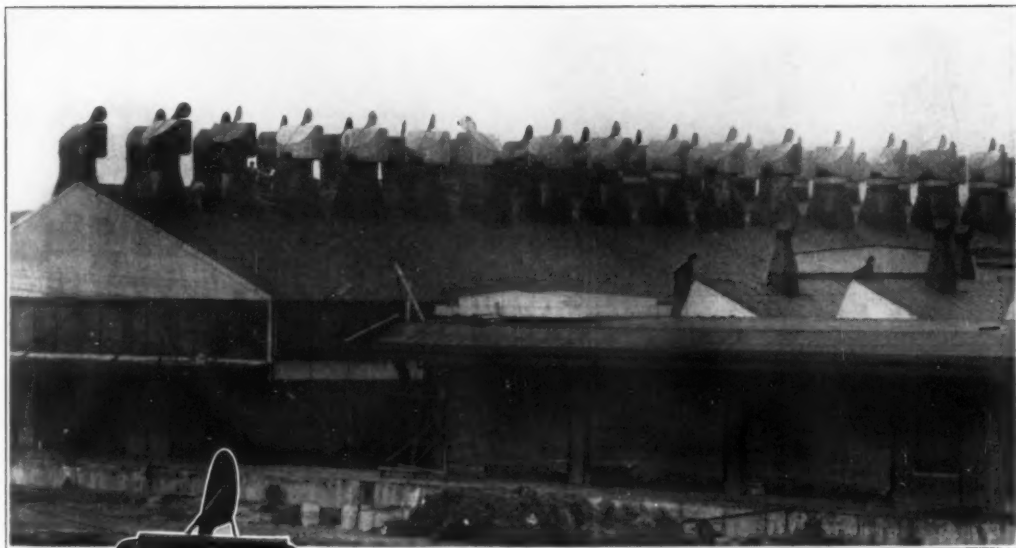


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Industrial Ventilation

VENTILATORS that "make good" on the hard job such as the one illustrated above, are the safest to select for every building where an adequate and dependable supply of fresh air is imperative.

Swartwout

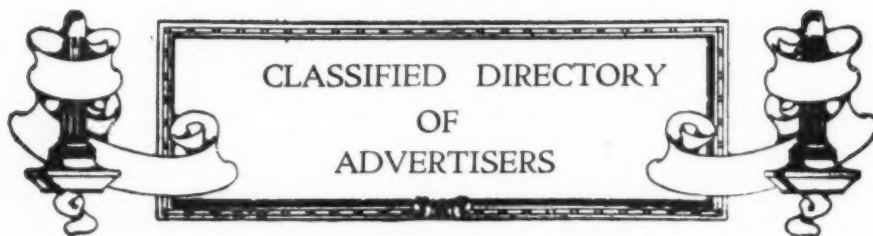
ROTARY BALL BEARING
VENTILATORS

in numerous instances have replaced and surpassed power operated exhaust systems at far less first cost and no operating expense. Stationary type ventilators which depend solely upon higher temperature inside than outside, have also given way to installations of Swartwouts and in each case have made the air change greater and more dependable.

A full explanation of the Swartwout principle is given in "The Gospel of Fresh Air." Your copy is waiting to be sent you by return mail.

**SWARTWOUT SPECIALTY DIVISION OF
THE OHIO BODY & BLOWER COMPANY
CLEVELAND**





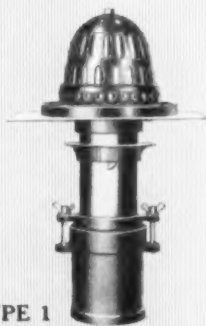
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Higgins, Charles M., Company.
- Ash Receivers.**
Sharp Rotary Ash Receiver Co.
- Bakery Machinery.**
Read Machinery Company.
- Blowers.**
Ohio Body & Blower Company.
- Boilers.**
Kewanee Boiler Co.
Smith Company, H. B., The.
- Boiler and Pipe Covering.**
Johns-Manville, Inc.
Ric-Wil Company.
- Brass and Bronze Workers.**
American Brass Company.
Bullard-Bodmer Company.
Newman Manufacturing Company.
Smyser-Royer Company.
Williams, Inc., Jno.
- Brick.**
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American Face Brick Assoc.
Common Brick Industry of America.
Fiske & Company, Inc.
Western Brick Company.
- Bridges—Steel.**
American Bridge Company.
- Builders.**
North Eastern Construction Co.
- Buildings—Steel.**
American Bridge Company.
Edwards Manufacturing Company.
- Building Papers.**
Barrett Company, The.
Bird & Son, Incorporated.
Johns-Manville, Inc.
Ruberoid Co., The (formerly the Standard Paint Co.).
Standard Paint Company (now The Ruberoid Co.).
- Calking and Glazing Compound.**
Pecora Paint Company.
- Casements.**
Crittall Casement Window Company.
Hoffman Manufacturing Company, Andrew.
- Ceilings—Metal.**
Edwards Manufacturing Company.
- Cement.**
Carney's Cement Company.
Sandusky Cement Company.
- Cement, White.**
Sandusky Cement Company.
- Chain Sash.**
Smith & Egge Manufacturing Company.
- Church Memorials.**
American Seating Company.
- Columns, Porch, Etc.**
Fireproof Products Company.
Hartmann-Sanders Company.
Union Metal Mfg. Co.
- Concrete Construction—Reinforced.**
American Steel & Wire Company.
Concrete Engineering Company.
Corrugated Bar Company.
General Fireproofing Company.
Northwestern Expanded Metal Company.
Truscon Steel Company.
- Concrete Hardener.**
Sonneborn Sons, Incorporated, L.
Truscon Laboratories, The.
- Conduits—Electric.**
Youngstown Sheet & Tube Company.
- Covering—Pipe and Boiler.**
Carey Co., Philip.
Johns-Manville, Inc.
Ric-Wil Company.
- Creosote Oil—Refined.**
Barrett Company, The.
- Damper—Fireplace.**
Covert Co., Inc., The H. W.
- Door—Bed.**
Murphy Door Bed Company.
- Door Check.**
Coburn Trolley Track Manufacturing Company.
Sargent & Company.
- Door Hangers.**
Coburn Trolley Track Manufacturing Company.
Stanley Works, The.
- Doors.**
Central Metal Products Corp.
Chesley Company, Inc., A. C.
Kinneear Manufacturing Co.
Lupton's Sons Co., David.
Morgan Woodwork Organization.
Peelle Company, The.
Reliance Fireproof Door Company.
Roddis Lumber & Veneer Company.
Thorp Fireproof Door Company.
- Doors—Steel Rolling.**
Edwards Manufacturing Company.
Kinneear Manufacturing Company.
- Drawing Inks.**
Higgins Company, Charles M.
- Dumbwaiters.**
Sedgwick Machine Works.

HOLT

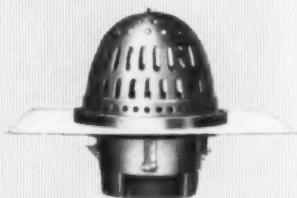
ROOF CONNECTIONS

No Roof is Perfect Without Them



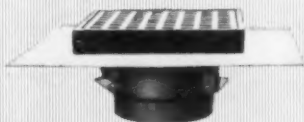
TYPE 1

To connect with Leader Lines
Flat Surface



TYPE 6-L

To connect with Leader Lines
Flat Surface



TYPE 6-T

To connect with Leader Lines
Flat Tile or Brick Surface

HOLT ROOF CONNECTIONS will give a lifetime of service without repair or attention. Surely that's long enough to satisfy anybody.

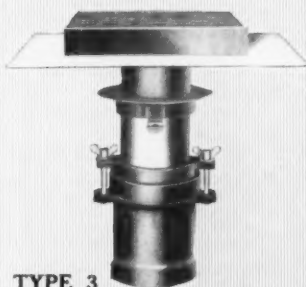
They're made by The Barrett Company whose experience in the roofing business goes back for over half a century.

Manufactured and sold by The Barrett Company and backed by *Barrett Service*. For complete details and specifications, ask for Architectural Service Sheets, Nos. 4, 5 and 6.

The *Barrett* Company

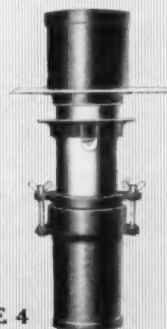
New York	Chicago	Philadelphia
Boston	St. Louis	Cleveland
Cincinnati	Pittsburgh	Detroit
New Orleans	Birmingham	Kansas City
Minneapolis	Dallas	Nashville
Syracuse	Seattle	Peoria
Atlanta	Duluth	Salt Lake City
Bangor	Washington	Johnstown
Lebanon	Youngstown	Milwaukee
Toledo	Columbus	Richmond
Latrobe	Bethlehem	Elizabeth
Buffalo	Baltimore	Omaha
Houston	Denver	Jacksonville

THE BARRETT COMPANY, Limited:
Montreal Toronto Winnipeg
Vancouver St. John, N. B.
Halifax, N. S.



TYPE 3

To connect with Leader Lines
Flat Tile or Brick Surface



TYPE 4

To connect with Vent Pipes
Flat Surface

Electrical Equipment.

Arrow Electric Company, The.
Crouse-Hinds Company.
Habitshaw Electric Cable Company.
Hubbell, Inc., Harvey.
Johns-Manville, Inc.
Simplex Wire & Cable Company.

Elevator Doors.

Peelle Company.

Elevators.

Kaestner & Hecht Company.
Otis Elevator Company.
Sedgwick Machine Works.

Enamel—White.

Berry Brothers.
Boston Varnish Company.
Du Pont de Nemours & Co., E. I.
O'Brien Varnish Company.
Pitcairn Varnish Company.
Smith, Edward & Company.

Fabrics—Decorating.

Chase & Company, L. C.

Fans—Ventilating.

Ohio Body & Blower Company.

Fences—Wire.

Anchor Post Iron Works.
Wickwire Spencer Steel Corporation.

Fire Escapes.

Dow Wire & Iron Works, Inc.

Fire Exit Devices.

Vonnegut Hardware Company.

Fireplace and Fireplace Fixtures.

Arnold & North Company.
Chattanooga Roofing & Foundry Company.
Covert Company, H. W.
General Gas Light Co.

Fireproof Doors, Shutters and Windows.

Chesley Company, Inc., A. C.
Coburn Trolley Track Manufacturing Company.
Crittall Casement Window Company.
Edwards Manufacturing Company.
Kinnear Manufacturing Company.
Peelle Company, The.
Reliance Fireproof Door Company.
Thorp Fireproof Door Company.
Truscon Steel Company.

Fireproofing:

See:

"Concrete Construction."
"Covering, Pipe and Boiler."
"Fireproof Doors, Shutters and Windows."
"Lath—Metal."

Floor Covering.

Armstrong Cork & Insulation Company.
Bladen Company, George W.
Congoleum Company, Inc.
Moulding Brick Co., Thomas.

Floor Finish.

Boston Varnish Company.
Smith & Company, Edward.

Floor Hardeners.

Anti-Hydro Waterproofing Company.
Sonneborn Sons, Incorporated, L.
Truscon Laboratories, The.

Flooring.

Armstrong Cork Company.
Barber Asphalt Paving Co.
Barrett Company, The.
Stedman Products Company.

Flooring—Ceramic Mosaic.

Associated Tile Manufacturers' Association.

Flooring—Sub.

Bishopric Manufacturing Co.

Furnishers.

Hampton Skops.
Nelson Company, W. P., Chicago, Ill.

Furniture.

Gunn Furniture Company.
Hampton Shops.
Leavens & Company, Inc., Wm.

Garage Hardware.

Coburn Trolley Track Mfg. Co.
Stanley Works, The.

Garden Furniture and Ornaments.

Hartmann-Sanders Company.
Union Metal Mfg. Co.

Glass—Window.

American Window Glass Company.

Glass Wire.

See "Wire Glass."

Greenhouses and Conservatories.

American Greenhouse Mfg. Co.

Granite.

National Building Granite Quarries Association.
Rockport Granite Company.

Hardware.

American Brass Company.
Bullard-Bodmer Company.
Newman Manufacturing Company.
Sargent & Company.
Soss Manufacturing Company.
Stanley Works, The.
Vonnegut Hardware Company.

Heat Insulation.

Johns-Manville, Inc.
Ric-Wil Company.

Heating Apparatus.

American District Steam Company.
Bishop & Babcock Company.
Dunham Company, C. A.
Fulton Company, The.
General Gas Light Co.
Grinnell Company.
Johnson Service Company.
Kewanee Boiler Company.
Massachusetts Blower Company.
Standard Heater Company.
Trane Company, The.
Webster-Warren Company.

Hinges—Invisible.

Soss Manufacturing Company.

Hoists—Asbes, Etc.

Gillis & Geoghegan.

Hollow Metal Products.

Central Metal Products Corp.

Incinerators.

Kerner Incinerator Company.

Insulating Base.

Bishopric Manufacturing Co.

Insurance—Building.

Queen Insurance Company.

Interior Decorators.

Hampton Shops.
Nelson Company, W. P., New York, 209-11 West
33d Street, opposite Pennsylvania Depot; Chi-
cago, 614 South Michigan Avenue.

Interior Trim.

See "Woods."

Iron Works—Architectural and Structural.

Newman Manufacturing Company.
Smyser-Royer Company.

Kalsomine.

Fox & Company, M. Ewing.

Kitchen Equipment.

Read Machinery Company.

Laboratory Furniture.

Kewanee Manufacturing Company.

Lath—Metal.

General Fireproofing Company.
Northwestern Expanded Metal Company.
Truscon Steel Company.

Lath Wire.

See "Wire Lath."



Decayed post of coal chute foundation.



Decayed intermediate sills and flooring of freight cars.

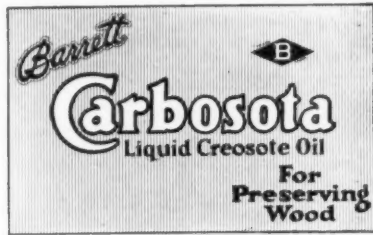


Decay is the greatest enemy of poles. Creosoting protects poles effectively.



Removing decayed roof boards over textile mill—the penalty for neglecting to protect the lumber against decay before erection.

(Courtesy F. J. Hoxie, Eng. Assoc. Factory Mutual Fire Ins. Cos., Boston, Mass.)



The Cost of Doing Without

Practically every large industry pays out for maintenance of wooden construction huge sums which could be saved by using Carbosota Creosote Oil. The cost of doing without Carbosota aggregates millions of dollars annually.

Because of its absolute physical fitness for application by non-pressure processes, Carbosota places the economy of wood preservation within the reach of every lumber user. Except in the cases where complete impregnation is required, such as piling, railroad cross ties, etc., Carbosota applied by Open Tank process (hot and cold bath treatment) or Surface treatments provides positive protection against wood decay.

A few of the many instances where the use of Carbosota will result in substantial savings are:

Mine Timbers and lumber used for all underground and surface construction.

Railroad Lumber used for car repairs, platforms, freight sheds, fences, roundhouse roof-decks, outhouses and other similar structures.

Pole Lines—for the treatment of new poles and also for salvaging sound portions of old poles which are suitable for short pole lines and stubs.

Roof-Decks of paper mills, textile mills and other buildings where excessive humidity exists. By preventing decay, Carbosota makes wood the ideal roof-deck material.

The Barrett Company

New York	Chicago	Philadelphia	Boston	St. Louis
Cleveland	Cincinnati	Pittsburgh	Detroit	New Orleans
Birmingham	Kansas City	Minneapolis	Dallas	Nashville
Salt Lake City	Seattle	Peoria	Atlanta	Duluth
Milwaukee	Bangor	Washington	Johnstown	Lebanon
Youngstown	Toledo	Columbus	Richmond	Latrobe
Bethlehem	Elizabeth	Buffalo	Baltimore	Omaha
Houston	Denver	Jacksonville		
THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg				
Vancouver	St. John, N. B.	Halifax, N. S.		

Lighting Equipment.

Arrow Electric Company, The.
 Beardslee Chandelier Manufacturing Company.
 Benjamin Electric Mfg. Co.
 Bullard-Bodmer Company.
 Electric Outlet Co., Inc.
 Hubbell, Inc., Harvey.
 Pearlman & Company, Victor S.
 Smyser-Royer Company.
 Union Metal Mfg. Co.

Lime.

Kelley Island Lime & Transport Company.

Limestone.

Indiana Limestone Quarrymen's Association.

Linoleum.

Armstrong Cork Company.
 Blabon Company, George W.
 Congoleum Company.

Locks.

Sargent & Company.

Lockers & Shelving Metal.

Edwards Manufacturing Company.

Lumber.

See "Woods."

Lumber—Steel.

See "Steel Lumber."

Mantels.

Arnold & North, Inc.

Marble.

Alabama Marble Company.

Memorials, Church.

American Seating Company.

Metal Lath.

See "Lath Metal."

Metal Lumber.

General Fireproofing Company.
 National Pressed Steel Company.
 North Western Expanded Metal Co.
 Truscon Steel Company.

Monel Metal.

International Nickel Company.

Mouldings.

American Brass Company.

Organs—Residence.

Estey Organ Company, The.

Ornamental Composition.

National Plastic Relief Company.

Ornamental Iron & Bronze.

See "Brass and Bronze Workers."

Paints.

Barber Asphalt Paving Co.
 Barrett Company, The.
 Berry Brothers.
 Boston Varnish Company.
 Devoe & Reynolds Company.
 Du Pont de Nemours & Company, E. I.
 Fox Company, M. Ewing.
 General Fireproofing Company.
 Goheen Corporation, The.
 Murphy Varnish Co.
 O'Brien Varnish Company.
 Patton Paint Company.
 Pecora Paint Company.
 Pitcairn Varnish Company.
 Ric-Wil Company.
 Ruberoid Co., The (formerly the Standard Paint Co.).
 Standard Paint Company (now The Ruberoid Co.).
 Tuscon Laboratories, The.
 U. S. Gutta Percha Paint Co.
 Voltax Company, The.
 Wadsworth Howland & Co.

Partitions—Toilet.

Hughes-Keenan Company.
 Sanymetal Products Co.
 Weis Mfg. Co., Henry.

Pencils—Drawing.

American Lead Pencil Company.
 Dixon Crucible Company, Joseph.
 Faber Eberhard.

Pipe Brass.

American Brass Company.



Exterior view and floor plan, Riviera Apartments, Baltimore, Md. John Freund, Architect. Note comparative areas occupied by Dow Escapes and stairways.

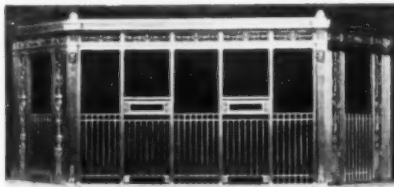
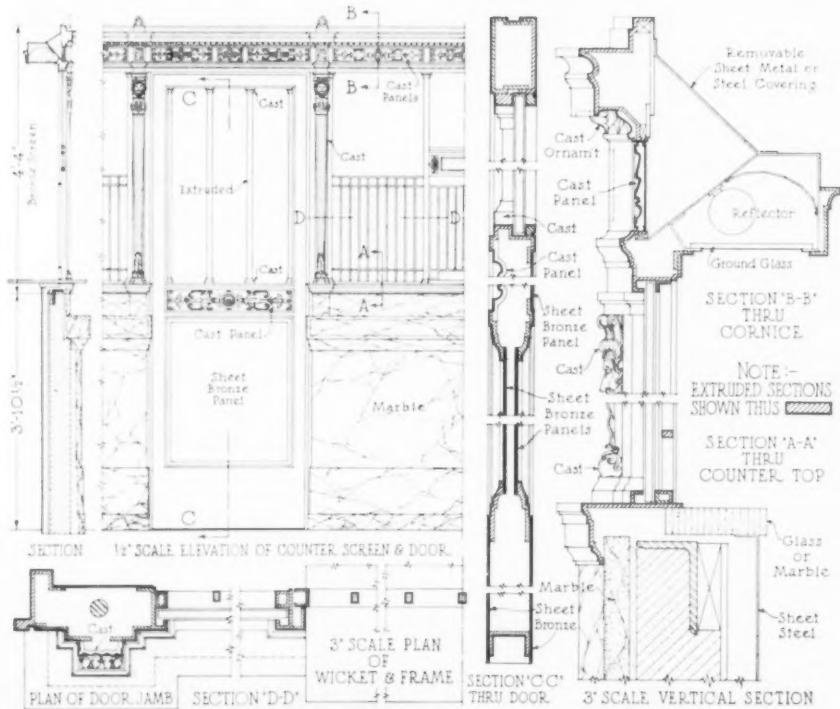
Safest and Yet—Invisible

Imagine, if you can, the beautiful Riviera Apartments of Baltimore, shown at the left, with the disfiguring effects of exterior step fire escapes. Of course it would be architecturally impossible. Although they are not visible, the building is equipped with the safest fire exits in the world—Dow Spiral Slide Fire Escapes. As illustrated in the plan, Dow Fire Escapes were incorporated within the walls of the building, running down to a fireproof basement, with easy access to the street. They occupy but one-half the floor area of a small concrete stairway with an exit capacity at least *three times as great*. Millions have passed through the hundreds now installed without a single mishap. Write Dow Wire and Iron Works, Incorporated, Louisville, Kentucky.

DOW SPIRAL SLIDE FIRE ESCAPE



Architectural and Structural Shapes



Bank Screen, Astor Trust Co., N. Y. C.

Chas. E. Birge, Architect

Executed by The

Gorham Company

Architectural Bronze Department

THE shaded sections in above plate illustrate actual application of The American Brass Company's extruded mouldings and shapes to the construction of distinctive architectural designs for cornice work, door and window trim, screens, elevator enclosures, etc.

For further details, see our pages in the forthcoming 16th edition of Sweet's Catalogue.

The American Brass Company

Waterbury, Conn.

Ansonia Branch:
Ansonia, Conn.

Kenosha Branch:
Kenosha, Wis.

Price lists and pamphlets sent on request
Send blueprint or sketch of patterns required

Standard

in Chiseled Bronze and Gold



*Designed and executed for the
Grand Lobby—Drake Hotel, Chicago*

Booklet upon request.

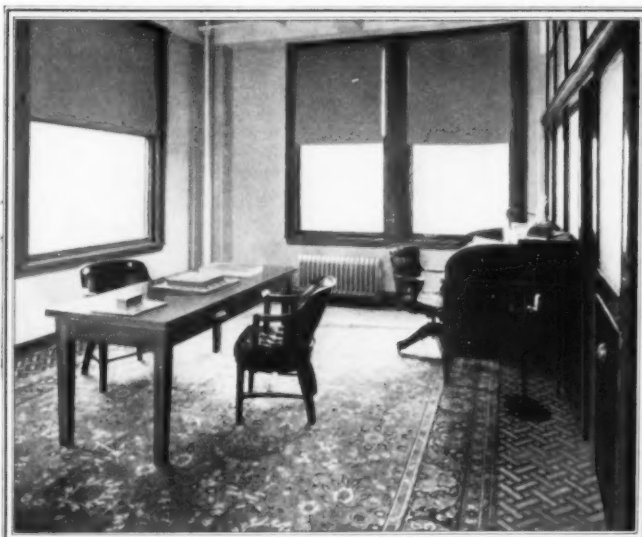
*Creators of Exclusive
Lighting Fixtures*

Victor S. Pearlman & Co.

Studios and Shops:

*533-535 South Wabash Ave.
Chicago, Ill.*

- Pipe—Steel.**
Youngstown Sheet & Tube Company.
- Pipe—Wrought Iron.**
Youngstown Sheet & Tube Company.
- Pipe and Boiler Covering.**
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Production processes, from raw materials to finishing touches, are described.

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Flame-Safe Plaster for Danger-
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For Greater Safety



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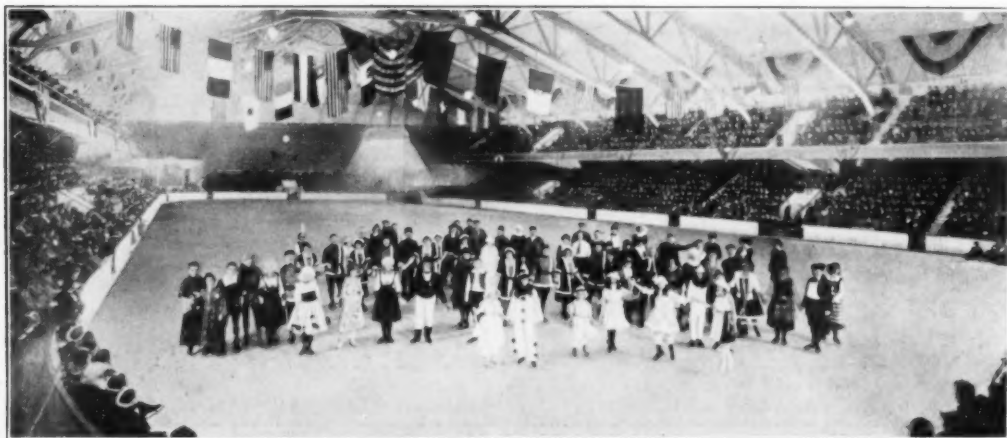
If you have equipped the exit doors with **Von Duprin** Self-Releasing Fire Exit Latches there is little to fear; the mere touch of hand or body on the **Von Duprin** latches instantly releases the doors.

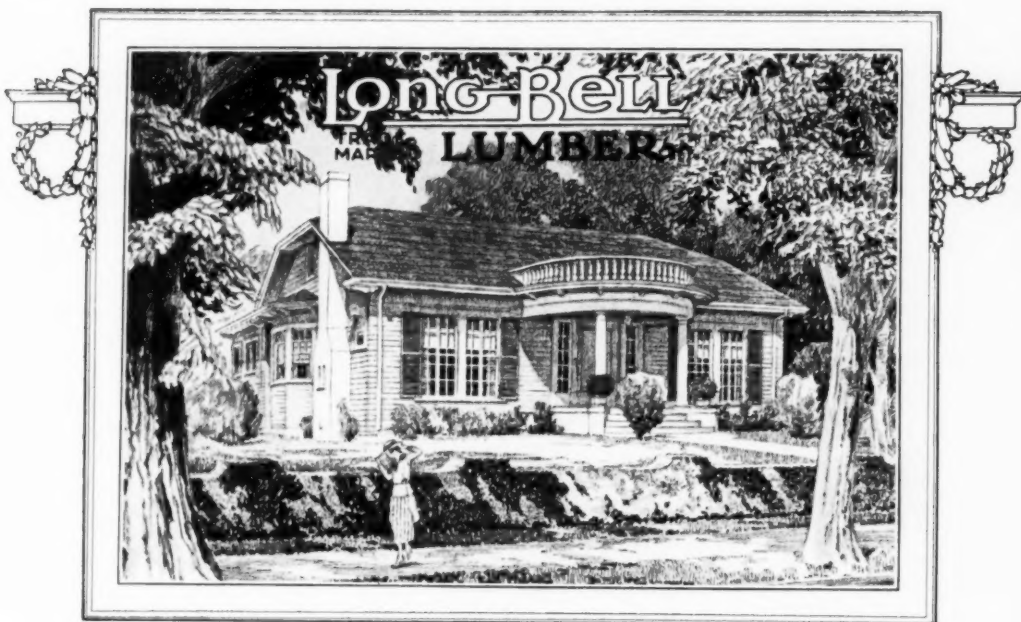
Von Duprin are sturdy, reliable, beautifully made and finished. No **Von Duprin** latch, anywhere, has ever failed to operate in an emergency.

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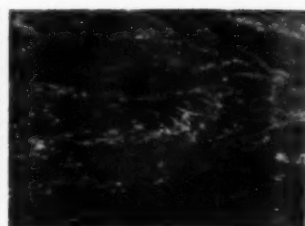
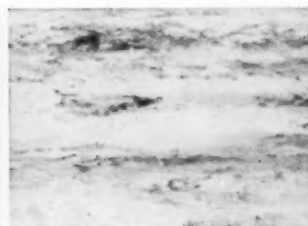
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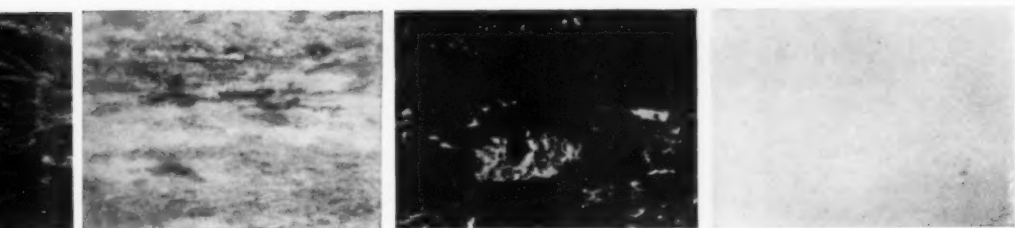
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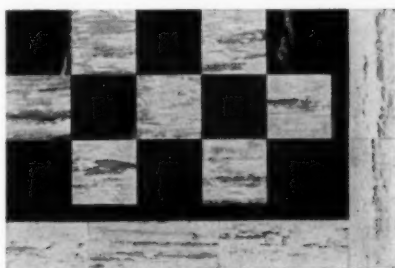
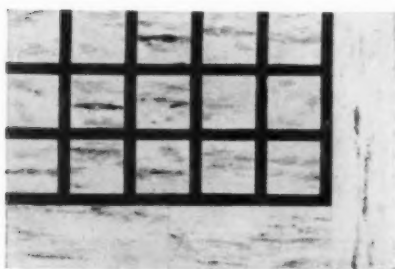


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Under this heading is listed a selection of (1) new catalogues, monographs and reports published by manufacturers, manufacturers' associations, technical societies, educational institutions and government departments, and (2) books on architecture and the allied arts. The manufacturers' publications may be secured by architects from the firms who issue them free of charge except where otherwise noted.

A NATIONAL LANDMARK. A pictorial presentation of the Massachusetts Institute of Technology, published by the firm of Stone & Webster, Constructing Engineers. Illustrated by 48 pages of halftone engravings printed in duotone, and published to commemorate the opening of the new plant on the 50th Anniversary of the founding of the Institute. 9x10 $\frac{3}{4}$ in. Bound in boards.

BASE AND SHEATHING. Bishopric Stucco and Plaster Base, Sheathing and Insulating Base. The Bishopric Mfg. Co., Cincinnati, Ohio. 7 $\frac{1}{2}$ x10 $\frac{1}{2}$ in. 52 pp. Illustrated.

BEDS, DISAPPEARING. "Create Comfortable Homes." The Holmes Disappearing Bed Co., 175 West Jackson Boulevard, Chicago, Ill. 6x9 in. 32 pp. Illustrated.

BOILERS, AUTOMATIC FEED. Analysis of the Newport Automatic Feed Boiler. The Newport Boiler Company, 105 South Dearborn St., Chicago, Ill. 8 $\frac{3}{4}$ x11 $\frac{1}{2}$ in. 24 pp. Illustrated.

BOILERS, AUTOMATIC FEED. Newport News and Views. The Newport Boiler Company, 105 South Dearborn St., Chicago, Ill. 7x10 in. 30 pp. Illustrated.

CAFETERIAS. School Cafeterias, Catalog 131. Albert Pick & Company, 208-224 West Randolph St., Chicago, Ill. 16 $\frac{3}{4}$ x11 $\frac{1}{4}$ in. 44 pp. Illustrated.

CASEMENT WINDOWS. The Casement Window Handbook for Homebuilders and Architects. The Casement Hardware Co., Madison Terminal Building, Chicago, Ill. 4 $\frac{1}{4}$ x5 $\frac{1}{4}$ in. 32 pp. Illustrated.

CEMENT. Shelter and the Development of Man's Abode. The Atlas Portland Cement Co., Chicago, Ill. 8 $\frac{1}{2}$ x11 in. 8 pp. Illustrated.

CEMENT. Advance Reground Waterproof Portland Cement and Advance Hydro Corundum Portland Cement. Advance Waterproof Cement Co., 15 E. Van Buren St., Chicago, Ill. 3 $\frac{3}{4}$ x9 in. 12 pp.

COLUMNS. Union Metal Columns. The Union Metal Manufacturing Co., Canton, Ohio. 7 $\frac{3}{4}$ x10 $\frac{3}{4}$ in. 24 pp. Illustrated.

CONCRETE HARDENER. Making poor concrete floors good and good ones better. General Chemical Co., 25 Broad St., New York. 8 $\frac{1}{2}$ x11 in. 12 pp. Illustrated.

CONCRETE REINFORCEMENT. Concrete Roads Must Be Reinforced. American Steel & Wire Co., Chicago, Ill. 6x9 in. 62 pp. Illustrated.

CONCRETE STONE. Many examples of the use of Decorative Concrete Stone. Economy Concrete Co., New Haven, Conn. Sixth edition. 9 $\frac{1}{4}$ x11 $\frac{1}{4}$ in. Bound in boards. 96 pp. Illustrated.

ELECTRIC LIGHTING. Brascolite Bulletin No. 1—"Hospitals." The Luminous Unit Co., St. Louis. 7 $\frac{3}{4}$ x10 $\frac{1}{2}$ ins. 28 pp. Illustrated.

ELECTRIC WIRING SPECIALTIES. Complete Catalogue. The Arrow Electric Co., Hartford, Conn. Loose leaf, 8 $\frac{3}{4}$ x10 $\frac{1}{4}$ in. 131 pp. Illustrated.

FIRE PREVENTION. The Industrial Fire Chief, April issue. Foamite Firefoam Co., 200 Fifth Ave., New York. 8 $\frac{3}{4}$ x11 $\frac{1}{4}$ in. 8 pp. Illustrated.

FIREPROOF BUILDINGS. Suggested Building Code Sections for Fireproof Buildings. The Gypsum Industries Association, 111 West Washington St., Chicago, Ill. 8 $\frac{1}{2}$ x11 in. 12 pp.

FIREPROOF BUILDING MATERIALS. "The Right Angle." No. 4. School House Number. The General Fireproofing Company, Youngstown, Ohio. 8 $\frac{1}{2}$ x11 in. 14 pp. Illustrated.

FLOOR COVERING. Leathersteel Mats and Runners. Leathersteel Products Co., 73 Lone Wharf, Boston, Mass. 7 $\frac{1}{2}$ x10 $\frac{1}{4}$ in. 28 pp. Illustrated.

FLOORING. Maple, Beech and Bond Flooring. The Maple Flooring Mfrs. Ass'n., Stock Exchange Building, Chicago, Ill. 7x9 $\frac{1}{2}$ in. 46 pp. Illustrated.

FURNITURE. Drafting Room Furniture. The C. F. Fense Co., 813-821 North Franklin St., Chicago, Ill. 6x9 in. 31 pp. Illustrated.

GYP SUM. Gypsum—Properties, Definitions and Uses. Booklet No. 108. Circular of the Bureau of Standards. Government Printing Office, Washington. 7x10 in. 21 pp.

GYP SUM PRODUCTS. Past and Present. The Rock Plaster Corporation, 381 Fourth Ave., New York, N. Y. 7 $\frac{3}{4}$ x10 $\frac{1}{2}$ in. 8 pp. Illustrated.

GYP SUM. Roof Construction of Pre-cast and Powdered Reinforced Gypsum. The Gypsum Industries Association, 111 West Washington St., Chicago, Ill. 8 $\frac{1}{2}$ x11 in. 5 pp.

HEAT REGULATION. Bulletins No. 115 to 150. The Powers Regulator Co., 2720 Newview Ave., Chicago, Ill.

HOW TO PLAN, FINANCE AND BUILD YOUR HOME. Published for the Southern Pine Association by the Architects' Small House Service Bureau of Minnesota. Produced by members of the American Institute of Architects, and endorsed by the same body. 10 $\frac{1}{2}$ x15 $\frac{1}{4}$ in. Illustrated with line and halftone cuts, and bound in boards. 156 pp.

RECENT PUBLICATIONS—Continued

- PERGOLAS.** Union Metal Pergolas and Garden Fixtures. The Union Metal Manufacturing Co., Canton, O. $7\frac{3}{4} \times 10\frac{3}{4}$ in. 16 pp. Illustrated.
- LAUNDRY TRAYS.** Catalogue of the Chicago Granitine Mfg. Co., 3617-3629 Wall St., Chicago, Ill. 4×9 in. 12 pp. Illustrated.
- LAUNDRY TRAYS, CONCRETE.** "A Necessity for Every Home." Chas. Wesely Co., 3116-28 S. Canal St., Chicago, Ill. $8\frac{1}{2} \times 11$ in. 16 pp. Illustrated.
- LIGHTING, SIDEWALK, ETC.** Catalogue A of the Morlitz Co., 410 West Ohio St., Chicago, Ill. $6\frac{3}{4} \times 10$ in. 46 pp. Illustrated.
- LIGHTNING PROTECTION.** Thinn Flat Absolute Protection from Damage by Lightning. W. C. Thinn Mfg. Co., 14 E. Jackson Boulevard, Chicago, Ill. $7 \times 8\frac{1}{2}$ in. 16 pp. Illustrated.
- LUMBER.** The Lumber Bulletin (Nos. 6, 7, 8 and 9). The National Lumber Manufacturers' Association, 750 McCormick Building, Chicago, Ill. $8\frac{1}{2} \times 11$ in. 8 pp.
- LUMBER.** Technical Notes. April. Forest Products Laboratory, Madison, Wisconsin. $8 \times 10\frac{1}{2}$ in. 14 pp.
- MAJOR TRAFFIC STREET PLAN, BOULEVARD AND PARK SYSTEM FOR PORTLAND, OREGON.** Bulletin No. 7 of the City Planning Commission of Portland, Oregon. Contains large map, extra copies of which are available for distribution. 6×9 in. 98 pp. Illustrated.
- METAL FIXTURES.** Union Metal Entrance Standards, Wash Brackets, Exterior Newels, and Garden Fixtures. The Union Metal Mfg. Co., Canton, O. $7\frac{3}{4} \times 10\frac{3}{4}$ in. 32 pp. Illustrated.
- METAL LATH.** Home Building. North Western Expanded Metal Co., 37 West Van Buren St., Chicago, Ill. 6×9 in. 32 pp. Illustrated.
- METAL LATH.** The Essentials of Building Construction for Home, and for Business and Public Buildings. Associated Metal Lath Manufacturers, 72 West Adams St., Chicago, Ill. 7×10 in. 16 pp. Illustrated.
- METAL WINDOW TRIM.** Knapp Sanitary Metal Window Trim. Knapp Bros. Mfg. Co., 2419-2425 W. Fourteenth St., Chicago, Ill. $8\frac{1}{2} \times 11$ in. 8 pp. Illustrated.
- REFRIGERATION.** Bulletin No. 28-G, of the Continental Machinery Co., 111 West Monroe St., Chicago, Ill. 6×9 in. 24 pp. Illustrated.
- REFRIGERATORS.** Refrigerators for Florists. Catalogue No. 75. McCray Refrigerator Co., 5162 Lake St., Kendallville, Ind. $10 \times 7\frac{1}{2}$ in. 24 pp. Illustrated in color.
- REFRIGERATORS.** Refrigerators for residences. McCray Refrigerator Co., 5162 Lake St., Kendallville, Ind. $7\frac{1}{4} \times 10$ in. 52 pp. Illustrated.
- ROOFING.** Thatched Effect with Creo-dipt Stained Shingles. Creo-dipt Company, Inc., 1024 Oliver St., North Tonawanda, N. Y. $8\frac{1}{2} \times 11$ in. 50 pp. Illustrated in color.
- ROOFING.** Selling Arguments for Tin Roofing. N. & G. Taylor Co., Philadelphia, Pa. $6\frac{1}{4} \times 9\frac{1}{4}$ in. 80 pp. Illustrated.
- ROOFING.** Roof Designs. N. & G. Taylor Co., 304 Chestnut St., Philadelphia, Pa. $8\frac{1}{2} \times 11$ in. 16 pp. Illustrated.
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- SHINGLES.** "Creo-dipt" Stained Shingled Homes. Collection of 50 photographs. Creo-dipt Co., Inc., 1024 Oliver St., North Tonawanda, N. Y. 6×9 in.
- SHINGLES.** Genasco Sealbac Shingles. The Barber Asphalt Paving Co., Philadelphia, Pa. $3\frac{1}{2} \times 6\frac{1}{4}$ in. 16 pp. Illustrated.
- SKYLIGHTS.** Daylighting the Factory. The G. Drouvé Co., Bridgeport, Conn. $8\frac{1}{2} \times 11$ in. 26 pp. Illustrated.
- SLATE, STRUCTURAL.** Chapter 3, Structural Service Data and Standards, "Stairways," Chapter 5, "Toilet Enclosures." The Structural Slate Co., Pen Argyl, Pa. $8\frac{1}{2} \times 11$ in. Illustrated.
- SPRINKLER SYSTEMS.** The Grinnell Bulletin for April. Grinnell Co., Inc., 284 W. Exchange St., Providence, R. I. $7\frac{3}{4} \times 10\frac{1}{2}$ in. 16 pp. Illustrated.
- STEAM HEATING.** The Part of Air Vents in Steam Heating Progress. By T. F. Musselman. Reprinted from The Architectural Review. The Hoffman Specialty Co., Inc., Waterbury, Conn. $5\frac{1}{2} \times 8$ in. Bound in boards. 48 pp. Illustrated.
- STORE FRONTS, COPPER.** Brasco Copper Store Fronts. Brasco Manufacturing Company, 5031 Wabash Ave., Chicago, Ill. $8\frac{1}{2} \times 11$ in. 28 pp. Illustrated in color.
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- TILE, HOLLOW.** Natco Wall Construction, Bulletin No. 174. The National Fire Proofing Co., Fulton Building, Pittsburgh, Pa. $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated.
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- TRAPS.** Record of Performance Tests of Trane Thermetal Traps. The Trane Co., 212 Cameron Ave., La Crosse, Wis. 6×9 in. 8 pp. Illustrated.
- TREES, SHRUBS, ETC.** Catalogue for Spring, 1921. Andorra Nurseries, Chestnut Hill, Pa. 5×9 in. 118 pp. Illustrated.

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WALNUT, BLACK. Black Walnut, Its Growth and Management. By F. S. Baker, Forest Examiner. U. S. Dept. of Agriculture, Bulletin No. 933. $5\frac{3}{4} \times 9$ in. 43 pp. Illustrated.

WALL PLASTER. Colored Wall Plaster. Bulletin No. 181. Technologic Papers of the Bureau of Standards, Government Printing Office, Washington. 7×10 in. 8 pp. Illustrated in color.

WATERPROOFING. Descriptive Specifications for use of Crescent Waterproofing Products. Crescent Sales & Mfg. Co., Chicago, Ill. $8\frac{1}{2} \times 10\frac{3}{4}$ in. 10 pp.

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RECENTLY RECEIVED FROM THE PUBLISHERS

THEATRES AND PICTURE HOUSES. By Arthur S. Meloy, Architect, of New York and Bridgeport, Conn. A practical treatise on the proper planning and construction of such buildings, containing useful suggestions, rules and data for the use of architects, prospective owners, etc. First edition of 2,000. Published by the Architects' Supply & Publishing Co., Tribune Building, New York. $6\frac{3}{4} \times 10\frac{1}{4}$. 120 pp. Illustrated with halftone engravings and with line drawings by the author.

THE SLIDE RULE. By C. H. Pickworth. 17th Edition. Published by Isaac Pitman & Sons, 2 West 45th St., New York. A practical manual covering all known practical variations of the slide rule, with instructions for their use and detailed explanation of the principles underlying them all. $5 \times 7\frac{1}{4}$ in. 132 pp. Illustrated.

BETTER CITIZENSHIP THROUGH ART TRAINING. A Syllabus for High Schools, Colleges, or Study Clubs. By Minna McLeod Beck, M.A., Art Director, Public Schools, Harrisburg, Pa. Chicago, A. C. McClurg & Co. 1921. In two parts, dealing with the General Theory of Art and the Practical Application of Art Principles. 5×8 in. 110 pp. Illustrated.

LA MAISON HEUREUSE. By Georges Benoit-Levy. Published by l'Association des Cités-Jardins de France, and obtainable from Claude Simond, 4 rue d'Aguesseau, Paris VIII, France. A general disquisition on the finishing and decoration of the modern house, the furniture and labor-saving equipment, etc. Illustrated with line cuts and halftones, chiefly reproduced from English and American publications. $6\frac{1}{2} \times 8\frac{1}{2}$ in. Paper bound. 76 pp.

MODERN TENDENCIES IN SCULPTURE. By Lorado Taft. Being the Scammon Lectures for 1917, published by the Art Institute of Chicago by the University of Chicago Press, Chicago, Ill. The six lectures deal respectively with Auguste Rodin, Recent French Sculpture, Recent German Sculpture, Recent Sculpture in Various Lands, August Saint-Gaudens, and Some Recent Tendencies in American Sculpture. Lorado Taft is Instructor in the Art Institute of Chicago, non-resident Professor of Art in the University of Illinois, and the author of *The History of American Sculpture*. The book has four hundred and twenty-nine halftone illustrations of the most notable examples of recent sculpture, and is published in royal octavo, xx+280 pages.

PROCEEDINGS OF THE PHILADELPHIA AND NATIONAL CONFERENCES ON THE CONSTRUCTION INDUSTRIES. Philadelphia Conference, Feb. 15 to 18, 1921. National Conference held at Chicago on March 2 and 3, 1921. Held under the auspices of the Industrial Relations Committee of the Philadelphia Chamber of Commerce and the National Federation of Construction Industries, Philadelphia, Pa. Issued in Philadelphia, Pa., April 15, 1921. 8×11 in. 254 pp.

"THE STUDIO" YEAR-BOOK OF APPLIED ART, 1921. Edited by Geoffrey Holme. Published by "The Studio," London, Paris and New York. Eight articles, ten illustrations in color, and nearly 100 monotone cuts. $8 \times 11\frac{1}{4}$ in. 122 pp.

ITALIAN RENAISSANCE FURNITURE. By Dr. Wilhelm Bode. Translated by Mary E. Herrick. Published by William Helburn, Inc., 418 Madison Ave., New York. $7\frac{1}{2} \times 10$ in. 134 pp. Illustrated with halftone engravings.



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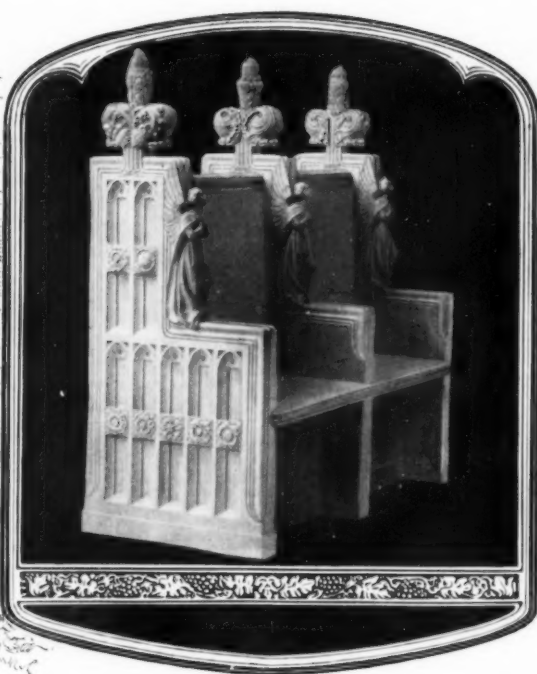
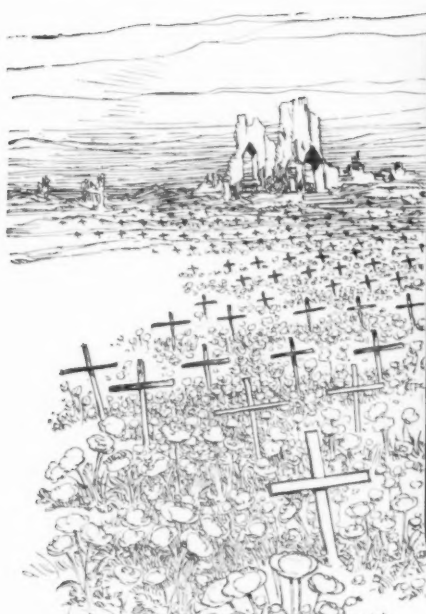
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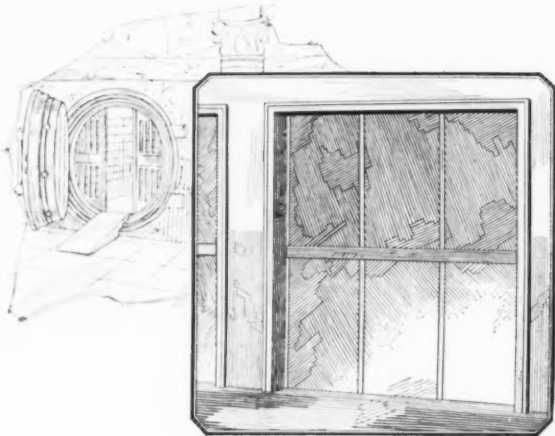
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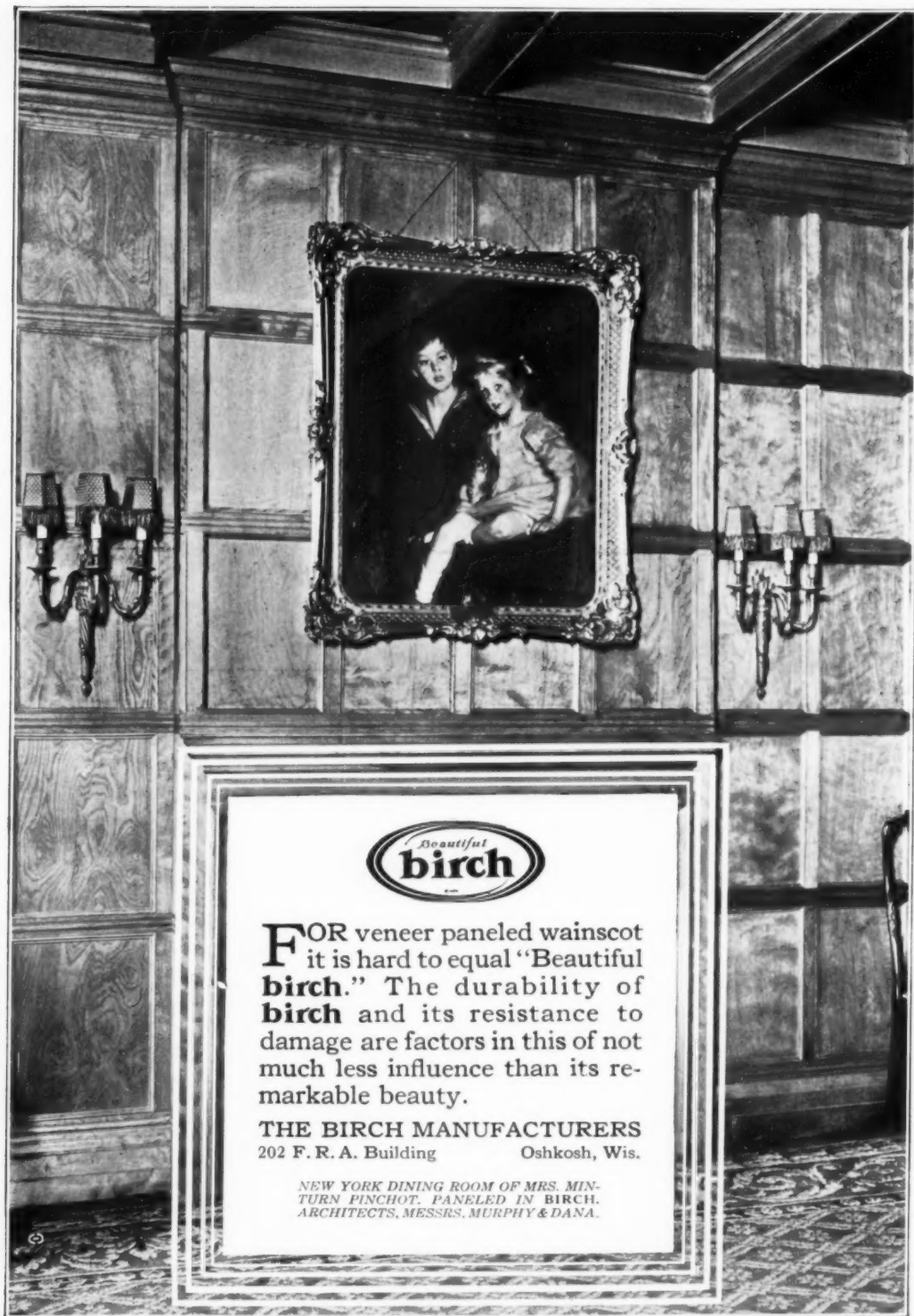
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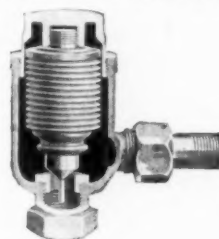
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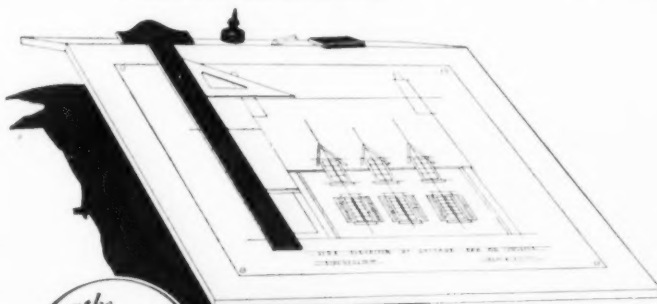
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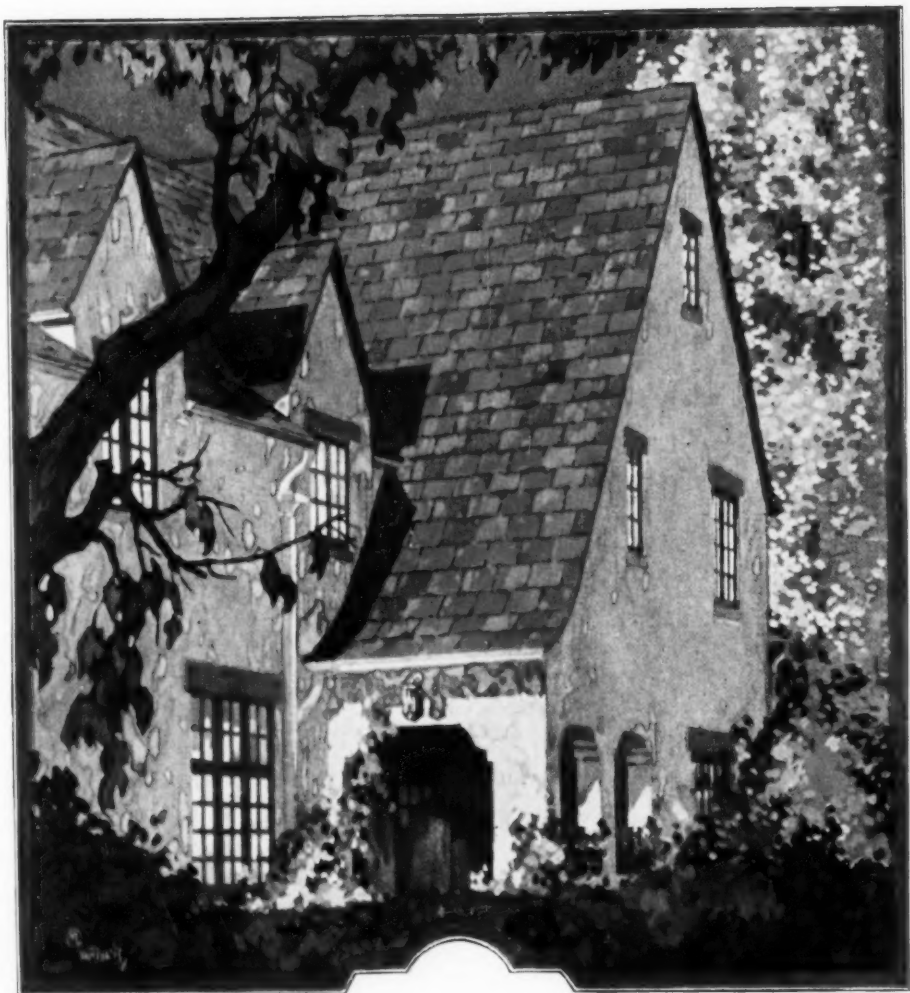
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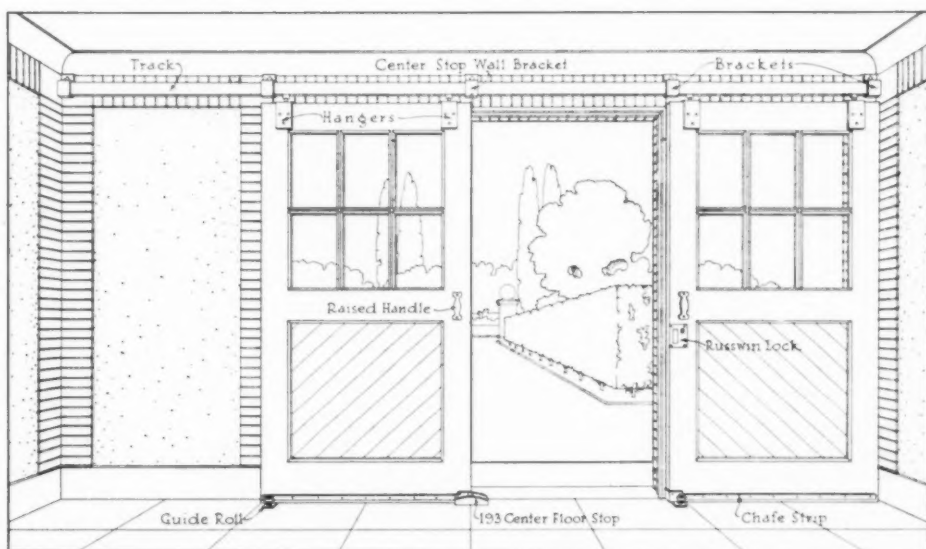
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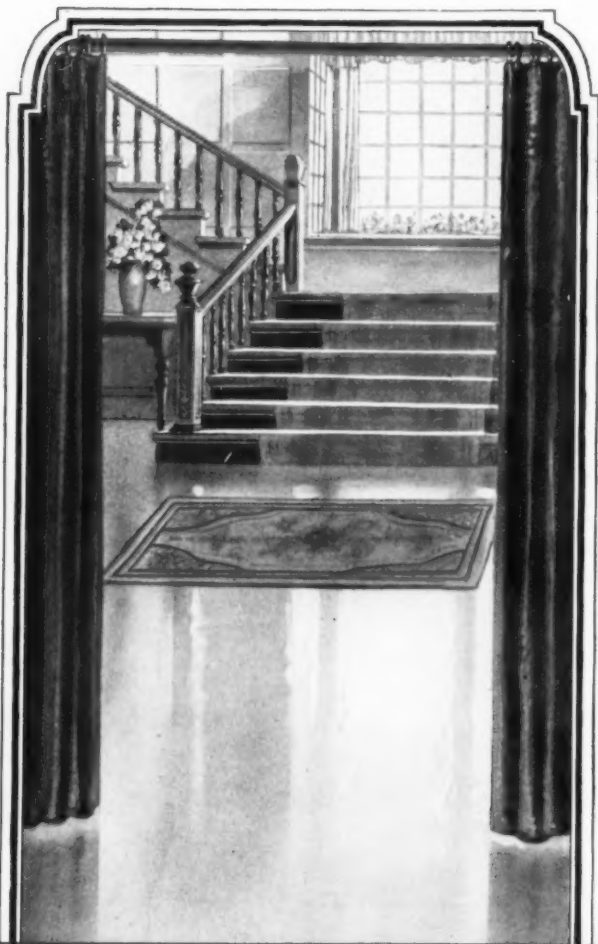
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—the first varnish manufactured
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FLOORS varnished with Supremis Floor Finish are enduring in their lustrous beauty.

Supremis Floor Finish dries exceptionally hard, and does not crack or scratch white. It is a waterproof varnish. These qualities make it the ideal finish for floors that are only partially covered.

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E. I. du Pont de Nemours & Co., Inc.

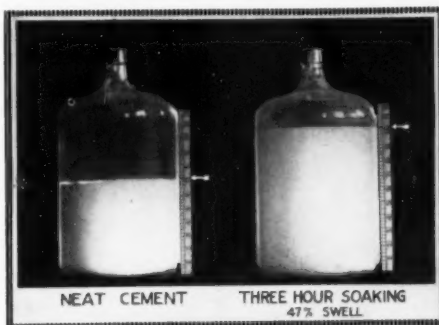
Sales Dept.: Paint & Varnish Section
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catalog
in Sweet's

Actual photographs of soaking test made on Carney's Cement April, 1921, under supervision of Bricklaying Instructor, Vocational Training Course, Cleveland Public Schools.



AN IMPRESSIVE CEMENT TEST

First bottle contained 7 inches of dry Carney's Cement. Water was then added equal to twice the cement volume.

Second bottle shows result after three hours soaking. At that time, all water was absorbed and cement had reached a height of 10 $\frac{1}{4}$ inches; an increase of 47% in volume.

At completion of test, the five gallon water bottle was broken, and the swelled cement stood up full height as a cylinder of plastic, jelly-like cement putty.

Coincident with this test, another was conducted with Carney's Cement soaking in a full size mortar box with twice its volume of water. The maximum swell after three hours was a cement putty of 50% greater volume than the neat cement.

1000 BRICKS PER BARREL OF CARNEY'S

This large increase in volume makes it possible for your contractor to lay approximately 1000 bricks per barrel of Carney's Cement. In other words, for every barrel of cement purchased, he actually has a barrel and a half after the soaking process:—a 50% saving in first cost of cement alone.

Soaking of Carney's Cement greatly improves its naturally plastic and smooth working qualities and insures the laying of many more brick per day.

It produces a uniformly solid wall; becoming harder than the brick it joins.

It can stand indefinitely after soaking without impairing its exceptional strength and durability, and mortar left in the box overnight may be retempered in the morning by simply adding water.

These unusual characteristics are only present in Carney's Cement and are not possible with any other make or mixture.

1 part Carney's Cement, 3 parts sand, no lime, is

"The Bond That Guarantees the Wall"

CARNEY'S CEMENT COMPANY, Mankato, Minn., Cement Makers Since 1883

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The Carney's Cement Sales Co.: Leader-News Bldg., Cleveland O.; Omaha National Bank Bldg., Omaha, Neb.; Chamber of Commerce Bldg., Chicago, Ill.; Syndicate Trust Bldg., St. Louis, Mo.; Atlanta Trust Co. Bldg., Atlanta, Ga.; Jas. Quinn, Jr.: Book Bldg., Detroit, Mich.; Carney's Cement Co.: Builders' Exchange, Minneapolis, Minn.



New Wrigley Building, pride of Chicago, is typical of the fine structures that are continually being laid up in Carney's Cement. The architects on this building, Graham, Anderson, Probst & White, and the contractors, Lanquist & Illsley, by specifying and using Carney's Cement have protected their good work against the ravages of time.

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The chaste beauty of this warm-hued, natural stone lends to the structure a dignity and refinement not obtainable with any other building material.

*Detail, Interior, Drake Hotel*

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Advertising by Illumination

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Imperial Projectors are made in various sizes which will take any lamp up to and including 1000 watts. Write for descriptive Floodlight Bulletin No. 304 and 304-A.

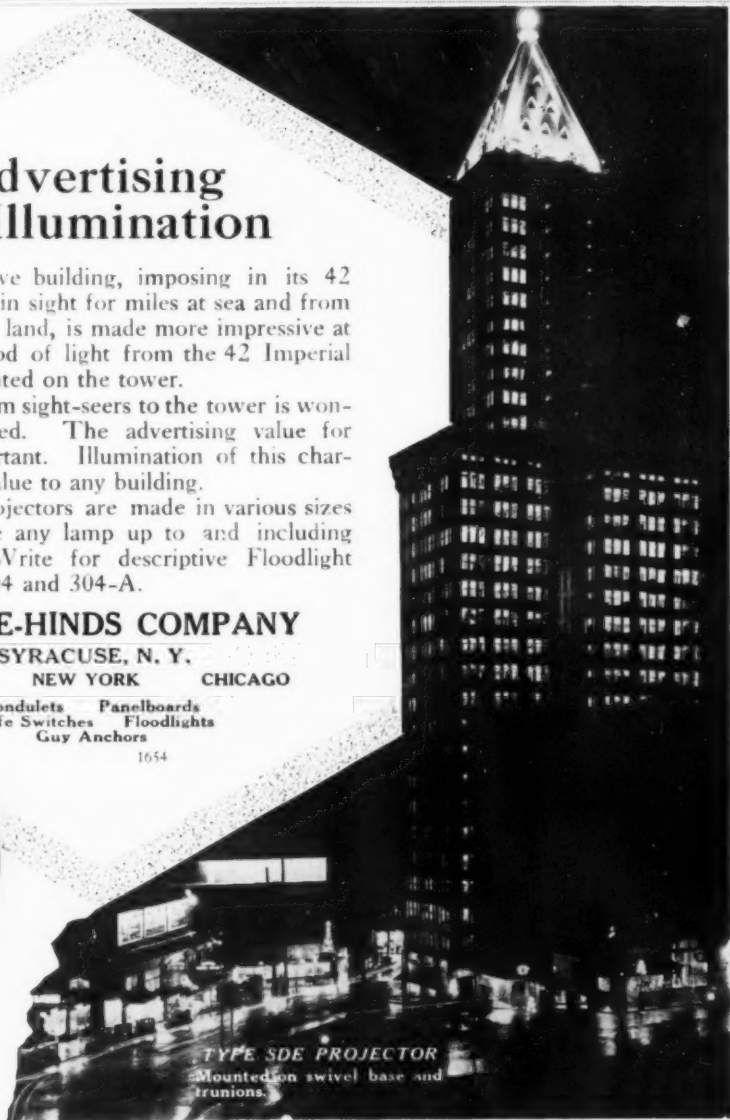
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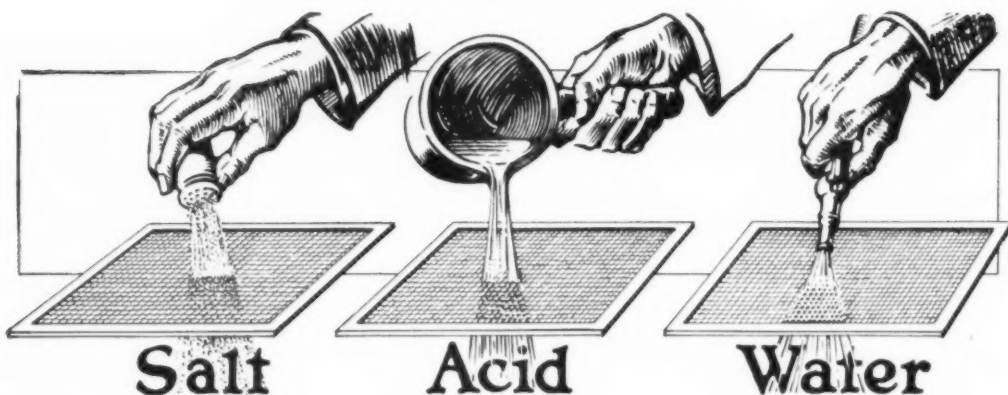
TYPE SDE PROJECTOR
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There is acid in smoke wherever coal is burned. Monel is immune to the continuous attack of smoke carried acids, which corrode or weaken most other screening metals.

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The International Nickel Company of Canada, Ltd.
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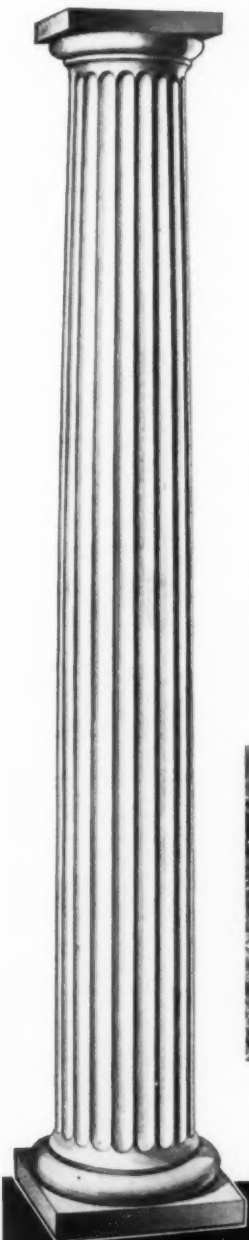
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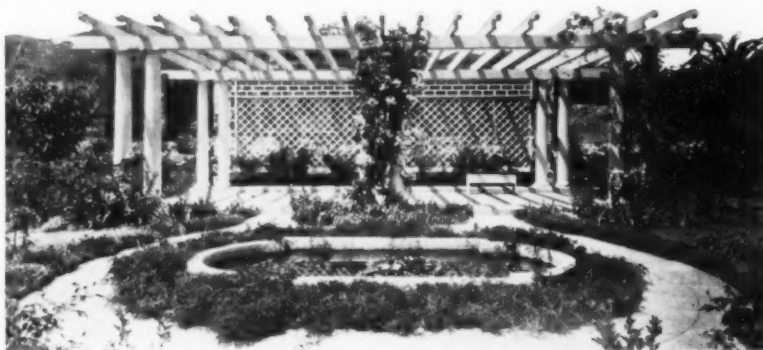
These beautiful Union Metal Columns, made in all designs and sizes from enduring copper bearing steel, furnish a striking contrast with green foliage and brilliant flowers.

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Our pergola catalog, No. 17-P, will show you some of the country's most beautiful pergola installations. Write for it today.

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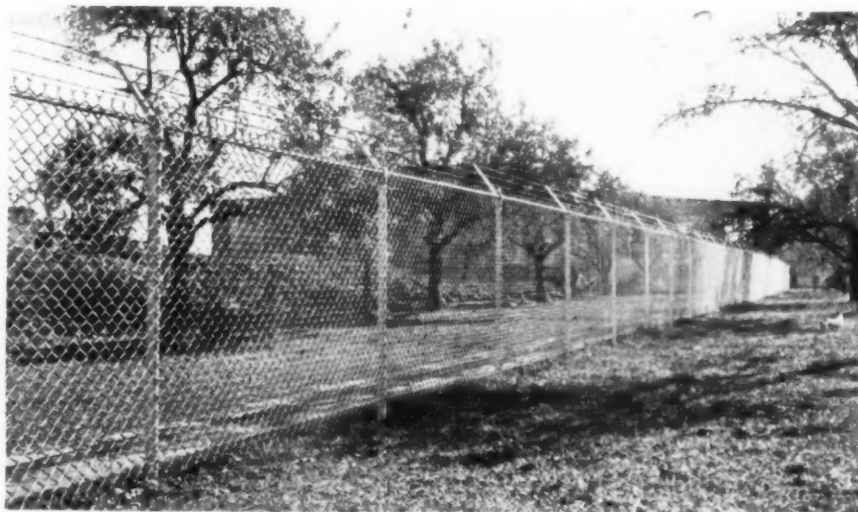
*Union Metal Columns and Lighting Standards
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*Union Metal Column
Design No. 240 Plain Doric,
well adapted to
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We refer you to our exhibit on pages 866 and 867 of Sweet's Architectural Catalog—the 15th Edition.



VAN DYKE

DRAWING PENCIL

The Lead That Leads

The sketch represents a Spanish Senorita of the Eighteenth Century drawn for Eberhard Faber by the world renowned artist, Karl Hassmann of the Austrian Academy of Vienna.

On this particular sketch three different grades of Van Dyke were used:

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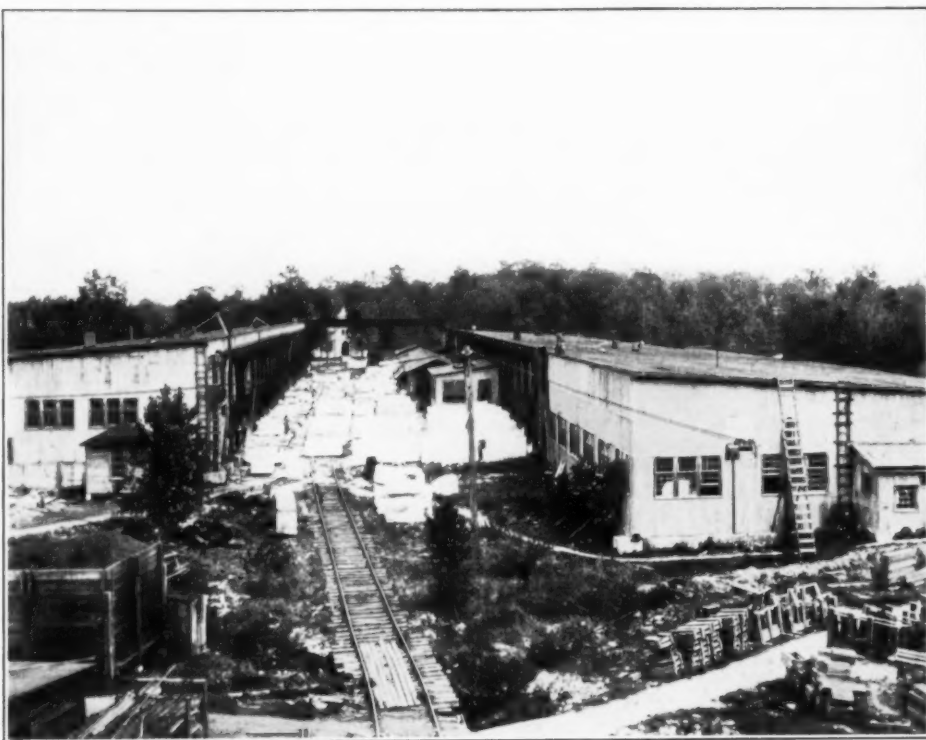
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Our three free booklets, in colors, contain much information about Oak Flooring of interest to you as a professional man. Write for them today.

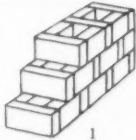


See page 389, Sweet's Architectural Catalogue, 15th Edition, for specifications.

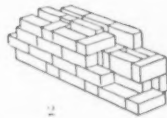
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Cuts Cost of

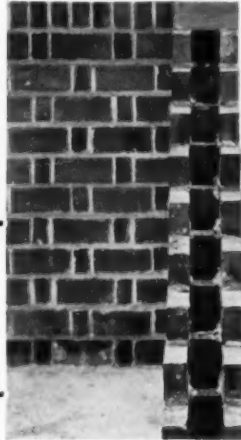


1



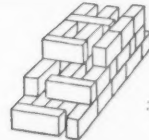
2

1—8-inch Ideal All-Rolok Wall.
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WALL

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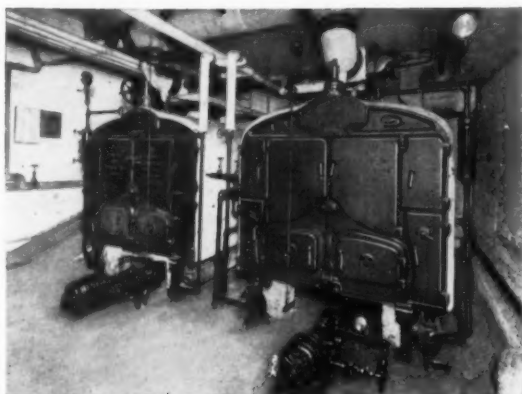


HOME OF FRANCIS J. OAKES, JR.

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A PICTURE OF PART OF THE BOILER ROOM IS SHOWN.



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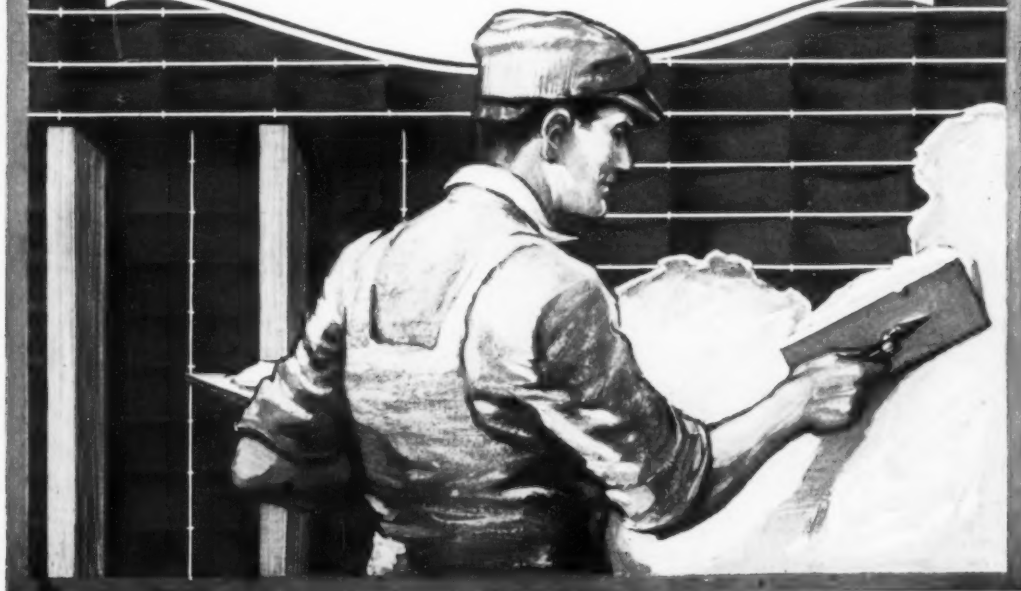
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2. Will it flake off—or stay on?
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We guarantee that Barreled Sunlight—the Rice Process White—will remain white longer than any gloss paint. Its smooth, lustrous surface is highly resistant to all forms of dust and dirt, and may be washed clean, like tile.

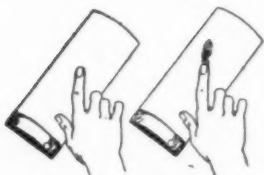
May be applied by brush or spray method. Sold in barrels, also in cans.

Write for specifications.

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Barreled Sunlight

Flat or egg-shell finish paint



Try this test yourself

Rub your finger over the smooth, lustrous surface of Barreled Sunlight. It will not leave a mark. Then note the smudge your finger leaves on the porous surface of flat or egg-shell finish paint.

Barreled



The Rice Process White

Sunlight



Copyright, 1921, by National Terra Cotta Society Drawing by Hugh Ferriss

Sales and Service Building
PACKARD MOTOR CAR CO. OF PHILADELPHIA
Cream matt glazed Terra Cotta ALBERT KAHN, Architect

NATIONAL TERRA COTTA SOCIETY is a bureau of service and information. Its publications cover not only the technical and structural use of the material but show, as well, examples of its application to buildings of various types.

Brochures of specific value, as indicated by their titles, will be sent to architects on request addressed to National Terra Cotta Society, 11 Madison Avenue, New York, N. Y.

The School The Theatre The Garage

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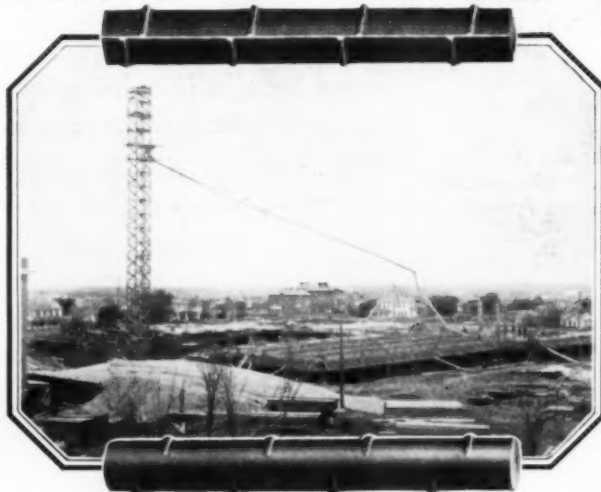
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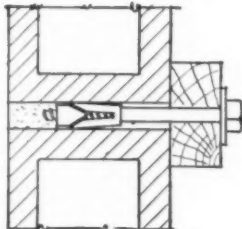
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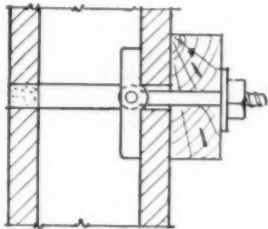
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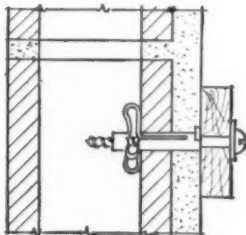
Fastening Furring, Grounds and Nailing Blocks to HOLLOW TILE



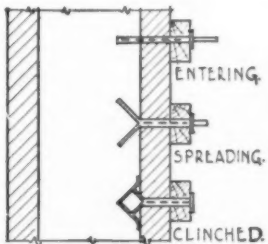
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Toggle Bolt



Collapsible Steel Screw Socket



Self-Clinching Nail

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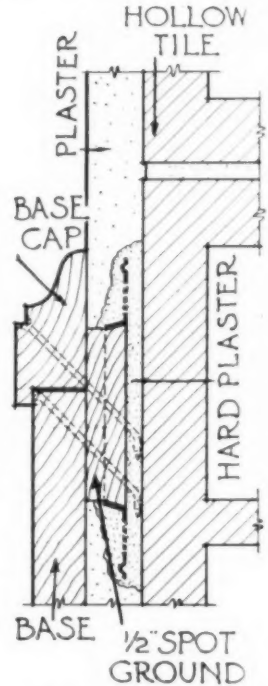
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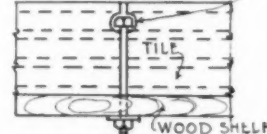
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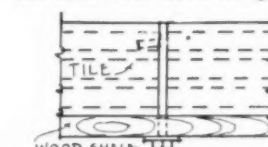
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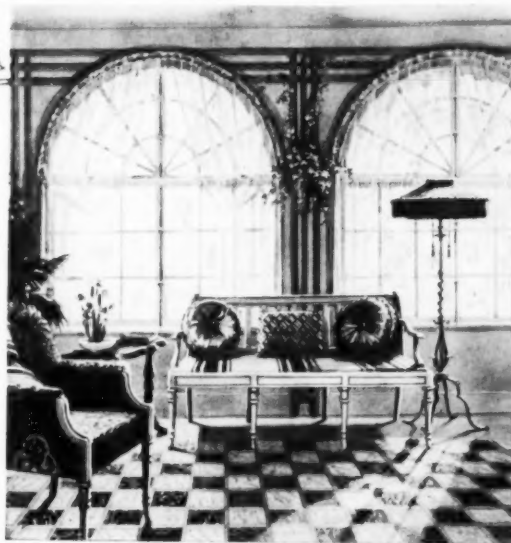
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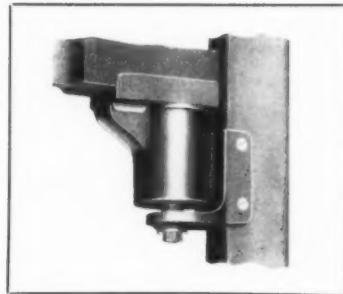


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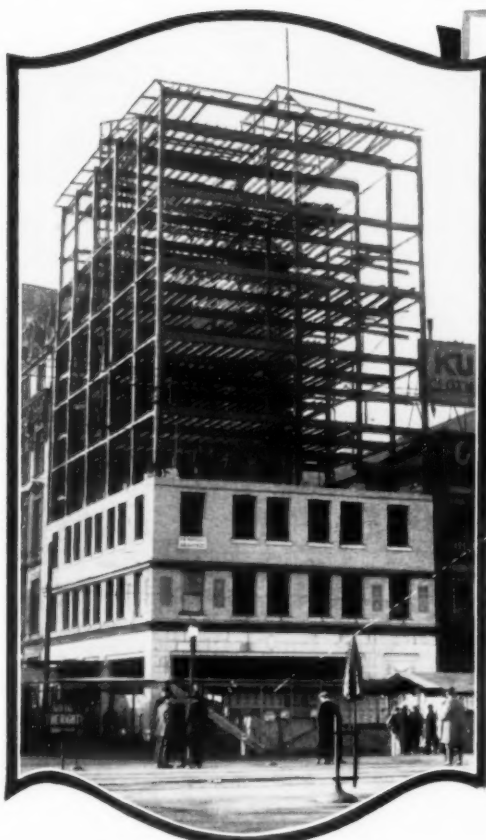
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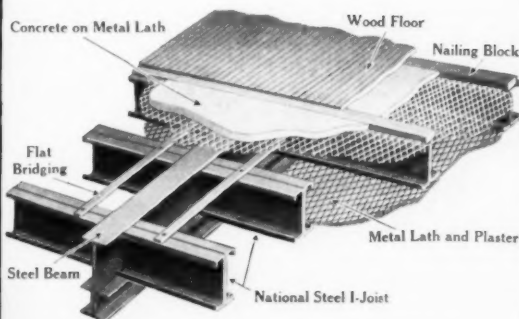
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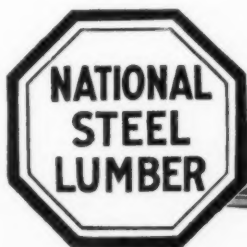
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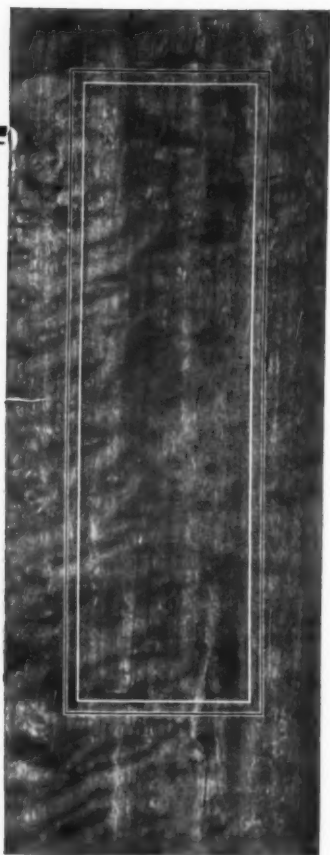
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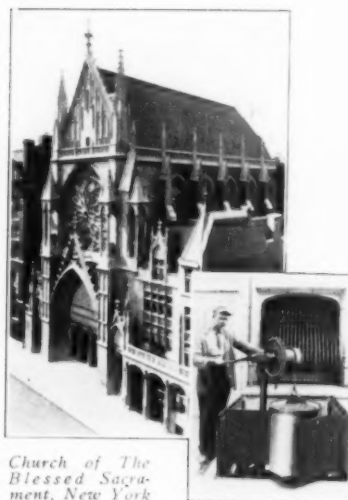
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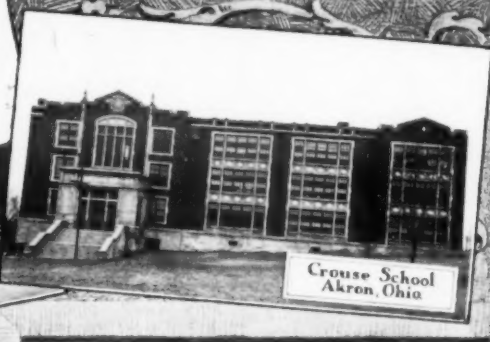
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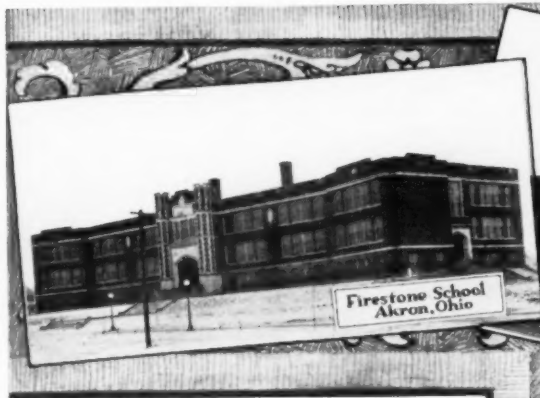


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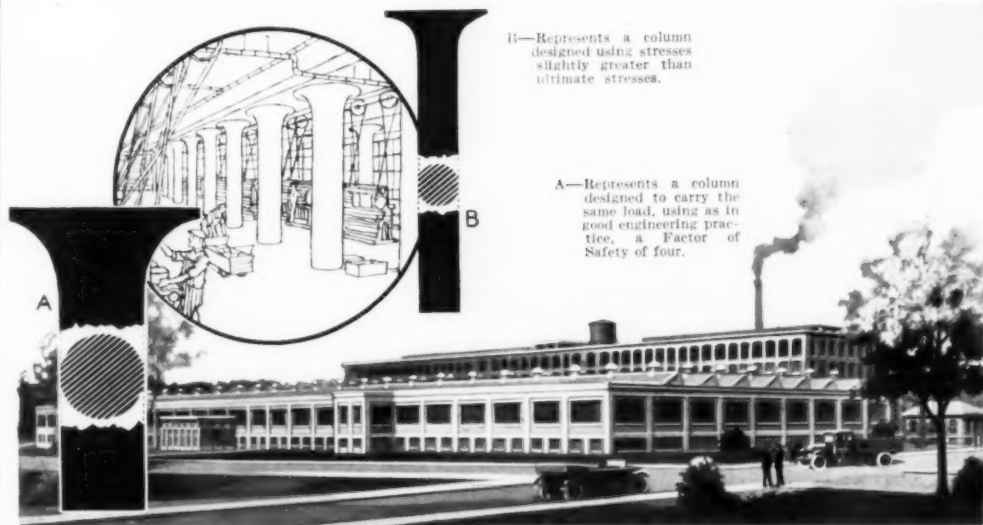
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.....

Whether we publish a catalog or employ one of these publications, we should of course include architectural details, correct phrasing for specifications, and show clearly how "Fisklock" brick and face brick is used around doors and windows, beams and corners, and for walls thicker than 8-inch.

You need not write a letter, not even sign your name -- merely state your preference and return this letter in the enclosed envelope.

We shall appreciate any statement regarding the extent to which you use Sweets or the Specification Manual.

Thanking you for your courtesy,

FISKE & COMPANY, INC.

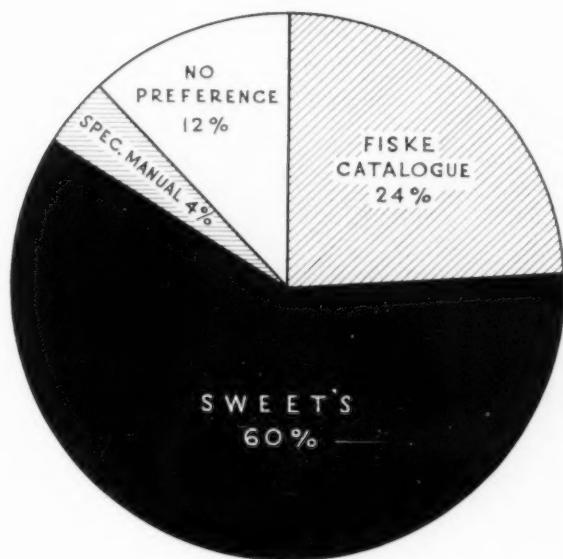
J. W. Peice

TWP/P

We use Sweet's catalogue continuously Treasurer

W. 207-10M-9-20

Facsimile of letter sent by Fiske & Co., Inc., to representative architects.



Graphic presentation of architects' first choice votes for preferred forms of catalogue data.

FISKE & COMPANY, INC., makers of "Fisklock" and "Tapestry" Brick, recently sent the letter reproduced on the opposite page to a number of representative architects, asking them to express their preferences for the form in which catalogue data should be sent to their offices. There were two hundred and forty replies.

The votes for first choice were as follows:

142 for a catalogue in Sweet's.

59 for an individual Fiske Catalogue.

30 expressed no preference.

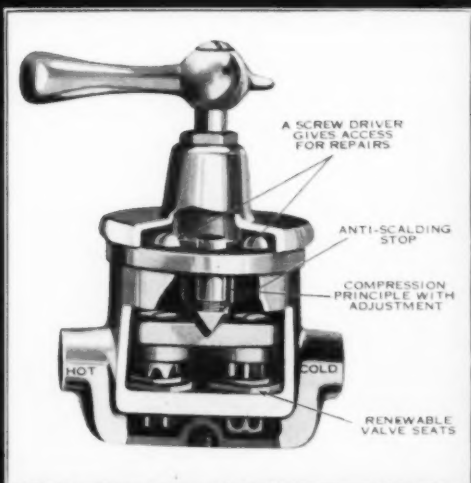
9 for the Specification Manual.

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Incorporated

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THE NIEDECKEN MIXER GRADUATES WATER TEMPERATURES AS DESIRED AND IS SUPERLATIVE AS A SHOWER OR BATH TUB SUPPLY CONTROL. REDUCING THE QUANTITY OF HOT WATER USED TO A MINIMUM, AS IT CAN BE SET TO A PREDETERMINED TEMPERATURE.

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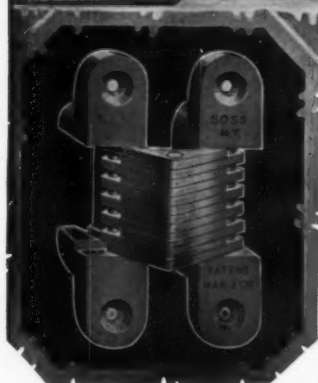
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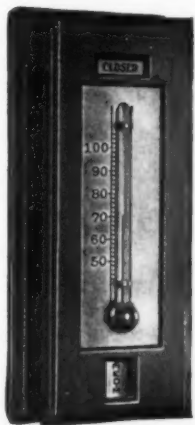
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MANY of the authorities of the 1921 National Council Fixture Market, held in Buffalo during February, considered this beautiful chandelier the masterpiece of the show. It is an exquisite example of the Georgian period, beautifully proportioned and rich in detail. Specially drawn corrugated tubing terminating in scrolls and ornamented with acanthus leaf decorations form the principal motif of the design. It is known as E20-110 and is finished in heavy silver plate with burnished high-lights, toned into old tarnish in the recesses.

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MADE OF SOLID BRONZE

50% Saving

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Sash Equipped with Kawneer-Simplex Reversible
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Mummy case from
Thebes, about 500 B. C.

The Story of Stucco

The Israelites were compelled by the Pharaoh of the period to make bricks without straw—which shows that the building value of a fibrous substance in bricks of finely divided clay was even than realized. But Egyptian Stucco was not so intermixed until builders took a lesson from the makers of mummy cases, who invariably incorporated a "hinder" into the moulded stucco which covered the wooden base. Thus one of the basic virtues of ASBESTONE is at least 2500 years old.

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Everlastic Magnesite Stucco

ASBESTONE Everlastic, for both exterior and interior use, is a fireproof, weatherproof, enduring and artistic composition containing magnesite and asbestos. It does not expand or contract and therefore not only does not crack, but successfully withstands settling strain that would completely ruin the ordinary kind. Non-conductivity makes it impervious to heat and cold, and it can be applied at any season of the year.

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Stucco and Composition Floor Manufacturers
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Established 1906





At a Touch of the Lever

UP to light — down for "off." The position of the lever tells at a glance the position of the switch. The "H & H" Flush Tumbler Switch is just one of these small niceties in hardware that add to the convenience and pleasure of up-to-date houses.

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"H & H"
Flush Tumbler
SWITCHES

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*Varnish Makers
for 94 Years*

OUR PRODUCTS

have been specified by architects continuously for ninety-four years. What endorsement could be greater?

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(Interior and Exterior)

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When You Plan a Garage

THE greatest advantage of McKinney Complete Garage Sets to Architects and Builders is that they promote rather than limit a wide range of design. When you plan a garage with these sets in mind, you know your plan will be followed down to the last line and your client satisfied.

These sets contain all the hardware necessary for garage doors—even the track. With drawings and directions, they are packed complete in a box—no odds and ends to buy afterward. The doors may be the swinging, sliding-folding, or, if space is particularly limited, “around-the-corner” type. There is a set for any size or any style doors you wish used.

McKinney Complete Garage Sets have been given the same careful attention that is responsible for the worth and work of McKinney Hinges and Butts. Fifty years of association with the development of builders' hardware serves advantageously in meeting the needs of the Architect and Builder.

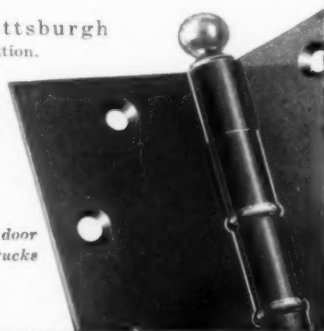
McKinney hung garage doors are pictured and explained in book form. This book shows how easily the sets are installed and how they make better looking, stronger and more protective doors possible. It not only points a way toward lower building costs but illustrates the possibility of varied designs. This book and the McKinney Catalog will be forwarded upon request.

McKINNEY MANUFACTURING CO., Pittsburgh
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McKINNEY

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Also manufacturers of McKinney garage and farm building door hardware, furniture hardware and McKinney One-Man Trucks



"The Noblest of Building Stone"

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Alfred S. Alschuler, Architect

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A Floor Covering— not a Structural Floor

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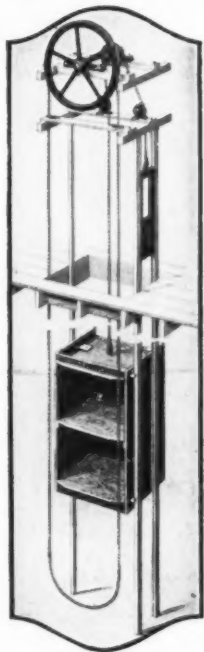
You can secure complete information on T-M-B Flooring from our new booklet. Write for a copy. We shall be pleased to send it.

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No other shades have Vudor advantages. Canvas drops are stuffy, heat conducting and they soil and become unsightly quickly, besides being hard to manage in spring and fall. Fragile bamboo screens neither shade nor protect from view.

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*Send for illustrations in colors
and name of your local dealer.*

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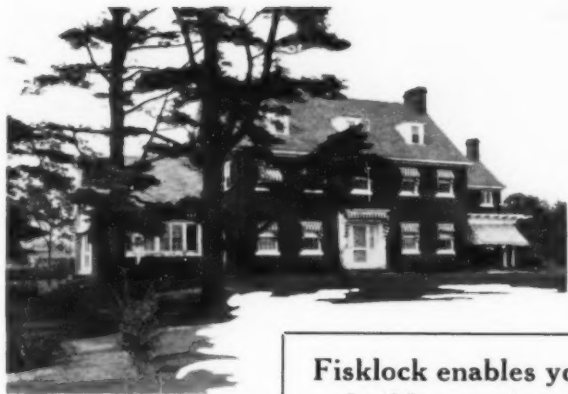
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SELF-HANGING

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VENTILATING PORCH SHADES



A FISKLOCK HOUSE

**Fisklock enables your Clients
to build now—it reduces labor
cost, freight and mortar**

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REG. U. S. PAT. OFF.
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A Thousand Years of Proof

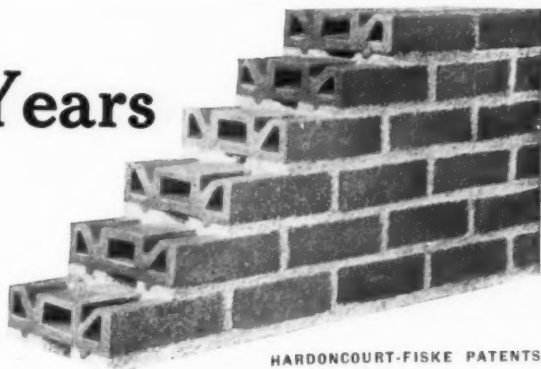
High repair bills don't just happen—they are the unescapable penalty of inexperienced or faulty choice in the beginning.

There's a thousand years of proof that face brick is unchanging—indifferent to rain, sun, fire.

"Fisklock" is a brick of the same quality; but improved mechanically by modern engineering:

A "Fisklock" brick, has a standard 8" x 2 1/4" face, yet reduces labor expense because it is equivalent to a face brick and a common brick.

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It is a dryer wall; moisture checks prevent water working through mortar joints.

It is a stronger wall; every "Fisklock" brick is also a header. There are no fillers or backing to be carelessly tied in. The inside of the wall is integral with the face—of the same quality, strength, and appearance.

It is a better wall—unequalled for economy, dryness, heat insulation, and strength.

FISKE & COMPANY, Inc.
BOSTON, MASS.

NEW YORK

WATSONTOWN, PA.

Face Brick

"Tapestry" Brick
Reg. U. S. Pat. Off.

Fire Brick



Edwards' Metal Shingles

*Will Outlast
Your Building*

**ROT-PROOF—FIRE-PROOF—
LIGHTNING-PROOF**

EDWARDS' METAL SHINGLES

in Ten Popular Patterns

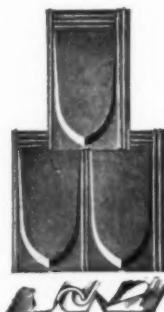
Edwards' Metal Shingles are attractive, durable, water, wind and fireproof. There's a design to suit every taste. They are easily laid; the only tools needed being hammer and nails. And the patent Interlocking Device provides automatically for expansion and contraction.

The Edwards Manufacturing Co.

610-630 Eggleston Ave.

Cincinnati, Ohio

The World's Largest Manufacturers of Metal Roofing, Metal Shingles, Metal Spanish Tile, Metal Ceilings, Metal Garages, Portable Buildings, Rolling Steel Doors, Partitions, etc.



ROOFING SLATE

"Once in a Life-Time"

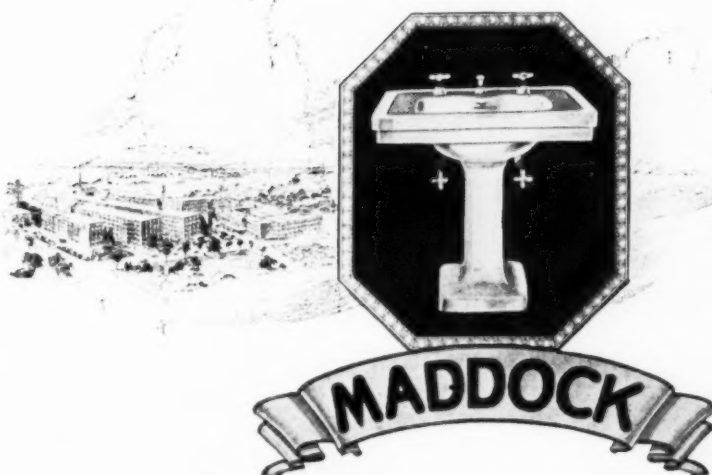
is the proposition which confronts the average home-builder and should be given the most careful consideration in selecting the proper building materials.

You cannot go wrong by putting on a **SLATE ROOF** because **SLATE** lasts not only a life-time, but *for centuries!*



VENDOR SLATE CO.
INCORPORATED
EASTON, PENNSYLVANIA





In the factory of the Fisk Rubber Co.,
Chicopee Falls, Mass.
Architect: Geo. B. Allen, Company's
Architectural Engineer
Plumbing Contractor: John W. Barnes,
Springfield, Mass.
Plumbing Jobbers: Plimpton & Hills Corp.,
Hartford, Conn.

The health protection features of Maddock sanitary equipment

Better sanitation, better health protection and better working conditions were all secured in the factory of the Fisk Rubber Company, Chicopee Falls, Mass. by the installation of Maddock sanitary equipment.

Maddock lavatories are provided with a patented cleansing feature which makes it easy to keep the overflow clean and sanitary. Maddock closets have extra large water surface and a thin flushing rim which provide the utmost in sanitation and non-soiling advantages.

And, being made entirely of snow-white, almost unbreakable vitreous china which will never chip, crack or craze, these fixtures give a maximum in health protection throughout a lifetime of use.

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Thomas Maddock's Sons Company, Trenton, N. J.
OLDEST - SANITARY - POTTERS - IN - AMERICA - ESTABLISHED 1859

Manufacturers of sanitary ware and plumbing fixtures for both homes and laundry work in the home; also sanitary ware for schools, industrial, commercial and public building conditions.

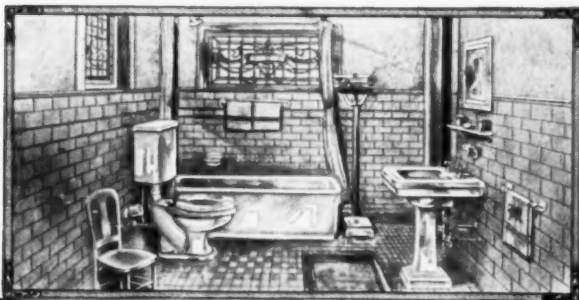
Branches: New York - Philadelphia - Chicago - San Francisco - St. Louis



The fixture shown above is the *Maddock*. A one-piece vitreous china lavatory of the pedestal type with integral supply nozzle and overflow cleansing device, both exclusive Maddock features.

The valve handles and other slab fittings are also made of vitreous china, which eliminates the care required to keep ordinary metal parts clean.

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RELIANCE KALAMEIN DOORS

Have become the nationally recognized standard among the architectural profession.

The new apartment house, 910 Fifth Avenue, New York—(Fred F. French Co., Architects and Builders)—is one of the most recent undertakings in which Reliance products were furnished and installed.

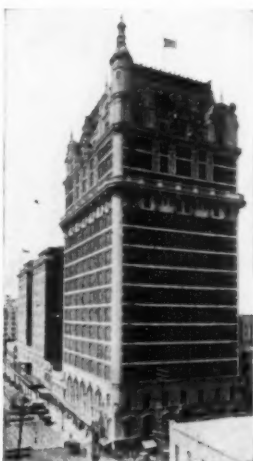
Mail us your requirements for an estimate.

Descriptive catalog sent on request.

**Reliance Fireproof
Door Co.**

BROOKLYN, N. Y.

Represented in All Principal Cities.



Adelphus Hotel
Dallas, Texas



SASH CHAIN



CABLE CHAIN

Special automatic machinery developed and perfected by us has made it possible to produce our chains with speed, uniformity, and success. As chain manufacturers for over forty years, our product has become known to the architect as the "Chain of Quality."

MADE OF

"Giant Metal," "Red Metal" and Steel

The SMITH & EGGE MANUFACTURING CO.

BRIDGEPORT, CONN.

See Page 943, Sweet's Catalog.

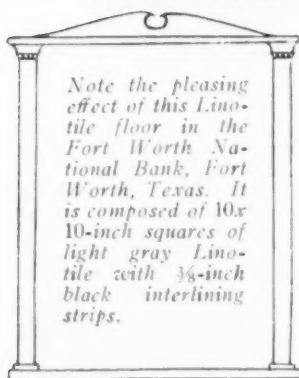
ORIGINATORS OF SASH CHAIN

LINOTILE

THE FLOOR THAT'S BUILT TO FIT THE ROOM



An Ideal Floor for Banks



Note the pleasing effect of this Linotile floor in the Fort Worth National Bank, Fort Worth, Texas. It is composed of 10x10-inch squares of light gray Linotile with 3/8-inch black interlining strips.

With the development of quiet dignity in bank architecture, Linotile is coming to be specified more and more as the ideal floor. Its resilient and comfortable texture and its distinctively pleasing appearance harmonize perfectly with the spirit of the banking room.

A cork composition, Linotile is warm and nonslippery underfoot and noiseless to the tread—qualities highly esteemed by the modern banker and appreciated by employees and patrons alike. Available in tiles of many sizes and in eleven attractive colors, Linotile affords an infinite variety of arrangement which practically frees the architect from the restrictions

imposed by neutral-colored floorings and conventional designs.

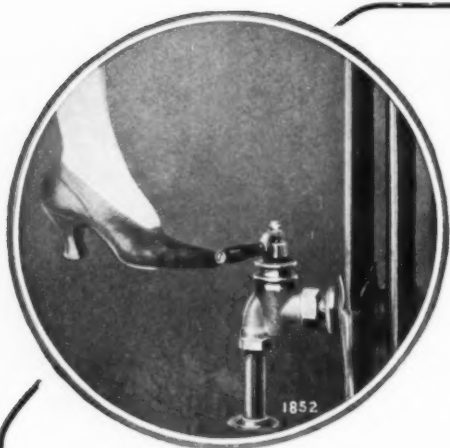
Linotile is nonabsorbent, easily cleaned and kept clean. Its tough, elastic texture is so peculiarly resistant to abrasion that a Linotile floor will endure severe service for a great many years without undue wear. It has no glazed surface to crack or craze and no grain to splinter. Linotile can be laid over any smooth base.

Write for a sample of Linotile and a copy of the book, "Linotile Floors," which describes the material fully and illustrates in color many typical installations.

Armstrong Cork & Insulation Company

161 Twenty-fourth Street, Pittsburgh, Pa.

Also manufacturers of Nonpareil Corkboard Insulation for cold storage rooms; Nonpareil High Pressure Covering for steam lines, feed water heaters, etc.; Nonpareil Insulating Brick for boiler settings, furnaces, ovens, etc.; Nonpareil Cork Machinery Isolation for noisy machines, and Armstrong's Cork Tile for floors in offices, residences, etc.



No stooping,—the slightest touch
of the foot operates the valve.

A Quarter Turn of the Handle

OPENS OR CLOSES THE

GORTON QUARTER TURN VALVE

It is the easiest operating valve in the world, and users will regulate heat in a room by opening and closing the radiators, saving steam.

With the old time valve requiring five or six turns of the wheel to open or close the valve they open the windows to cool a room, an immense waste of steam.

Wasted steam is wasted coal.

Equip your radiators with Gorton Valves and save money on your Coal Pile.

Gorton & Lidgerwood Co.

Write for
Catalogue

FISHER BUILDING, CHICAGO, ILL.

94 Liberty Street, New York, N. Y.

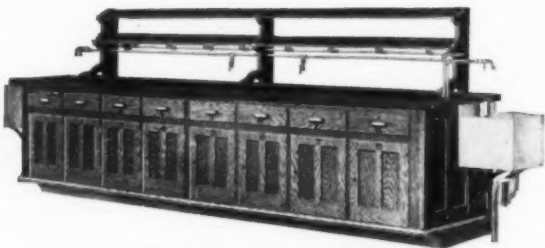
See Sweet's Architectural Catalogue, Page 1757, for Specifications

How Architects Make Use of Kewaunee Engineering Service

Each year more Architects come to make use of Kewaunee Engineering Service in planning Educational and Industrial Laboratories.

We feel certain that any Architect who is contemplating a School, Hospital, Industrial Plant or any other building in which Laboratory Furniture is to be used can strengthen his own organization and render a further valuable service to his client by calling us into consultation early in the work.

Our Engineering Department is at your service without placing you under the least obligation.



A Good Chemistry Desk, No. 866.

May be provided with bench for microscopic work.

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS

103 Lincoln St., KEWAUNEE, WIS.
NEW YORK OFFICE, 70 FIFTH AVENUE

BRANCH OFFICES:

Chicago Minneapolis Kansas City Denver Atlanta Alexandria, La. Columbus Little Rock
Dallas Spokane Jackson Oklahoma City Los Angeles Toronto, Can.

Jenkins Renewable Disc Valves

JENKINS VALVES fitted with Jenkins Renewable Discs give unvarying and ever-dependable service. The discs take up the wear and give the valves practically unlimited life. A Jenkins Disc will give long service, and, when necessary, can be quickly and easily replaced—one or two minute operation.

More and the best metal goes into Jenkins Valves—it is properly distributed, there is no weakness at any point—each valve is made heavy and strong enough for the maximum, as well as the average service.

Jenkins Valves are made in types and sizes to meet all requirements of plumbing, heating, and power plant service—they are widely distributed and may be obtained without delay from supply houses in all sections of the country.

A few of the most commonly used Jenkins Renewable Disc Valves are shown herewith: Fig. 106, Standard Brass Globe Valve; Fig. 112, Standard Brass Hose Angle Valve; Fig. 124, Standard Brass Y or Blow-Off Valve; Fig. 352, Standard Brass Swing Check Valve; Fig. 311, Standard Brass Angle Valve with Brass Wheel.

If specifications call for genuine Jenkins Valves bearing the name and "Jenkins Diamond Mark" there will be no mistake about the valves that go into the installation.

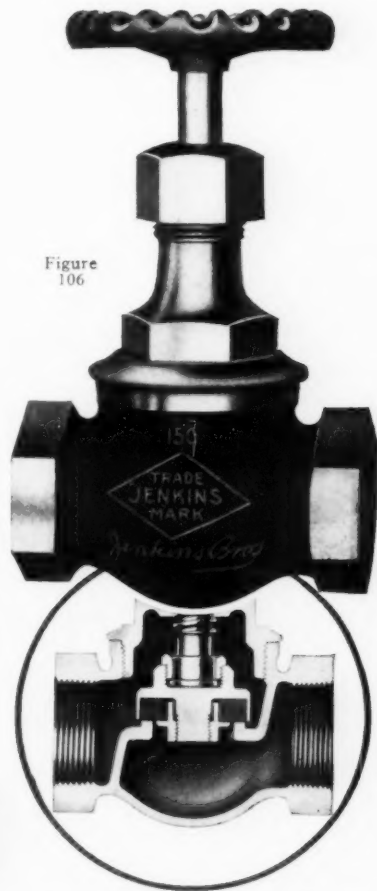
JENKINS BROS.

New York Chicago Philadelphia Boston
Montreal London Havana

FACTORIES: Bridgeport, Conn.; Elizabeth, N. J.;
Montreal, Can.



Figure 106



Note the perfect contact of the disc on the seat when the valve is closed.

Jenkins Valves

SINCE 1864

The BILTIN

CHINA

BATHROOM ACCESSORIES

Patented



QUALITY EQUIPMENT

Fairfacts Bathroom Accessories are specified regularly by many distinguished architects and are in use now in many of the finest homes in this and other countries. The various fixtures are designed to meet every requirement of good taste.

The Fairfacts Company

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NEW YORK, U.S.A.



Mississippi Polished Wire Glass

The Real Worth of a Building Is In Its Construction

if it is to be a permanent investment built for real service, with maintenance cost reduced to a minimum, so as to secure the maximum of service and income.

It Must Be Fireproof

for such construction cannot be perishable. Therefore, the cost of maintenance must be low, so don't be influenced entirely by first cost, but bear in mind the future, and remember:

No building of fireproof construction is completely equipped unless it has approved metal frames and

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To secure the standard which is always preferable, specify the product of

Mississippi Wire Glass Co.

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Are Architects different?

WE have been told that manufacturers of building materials rarely describe their products in a way entirely satisfactory to architects.

It is said that architects are *different*—that their problems are such as to require more specialized information regarding a product than given in most advertising and descriptive matter.

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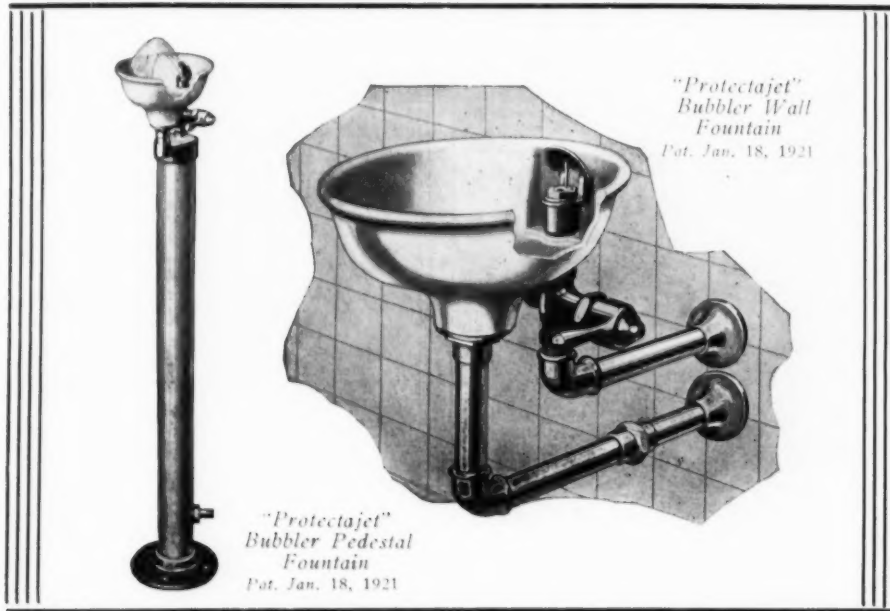
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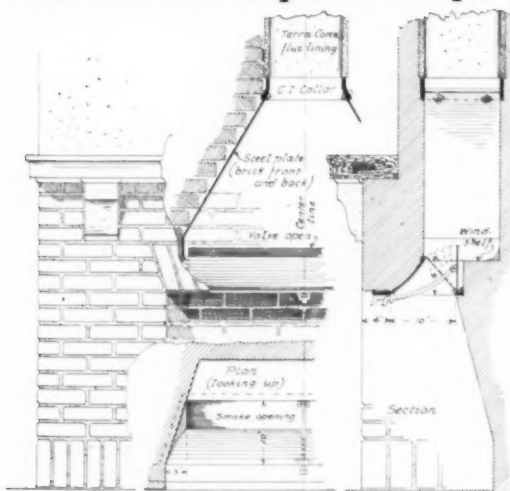
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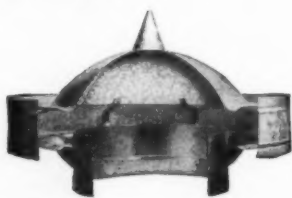
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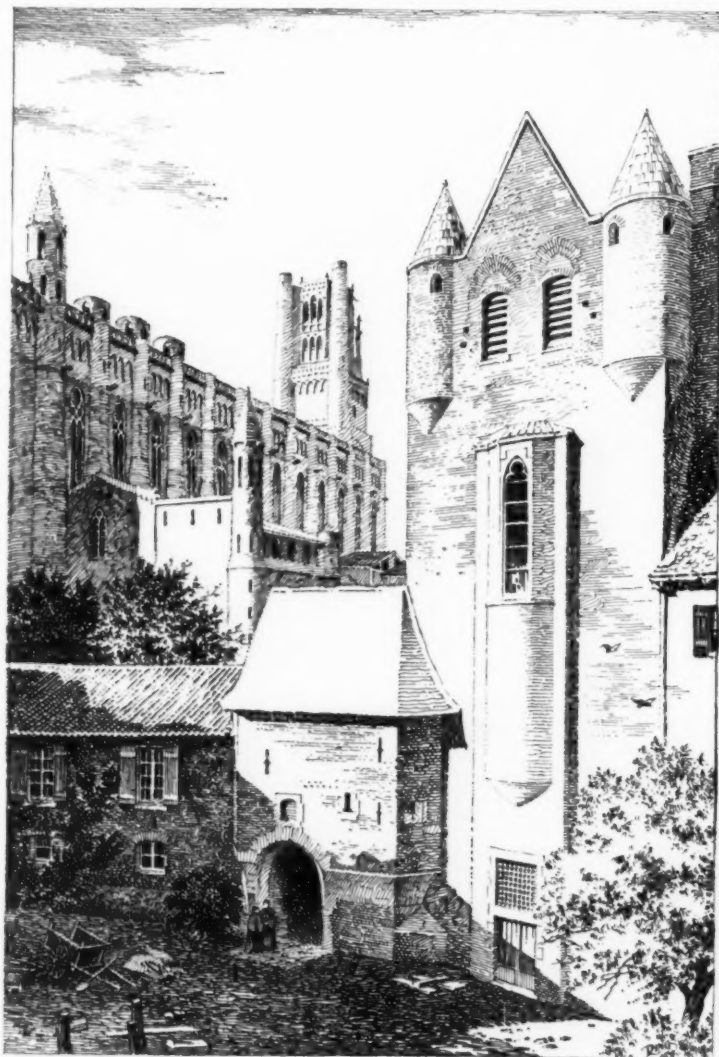
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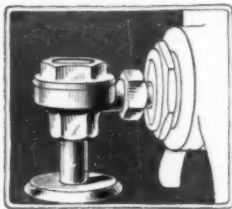
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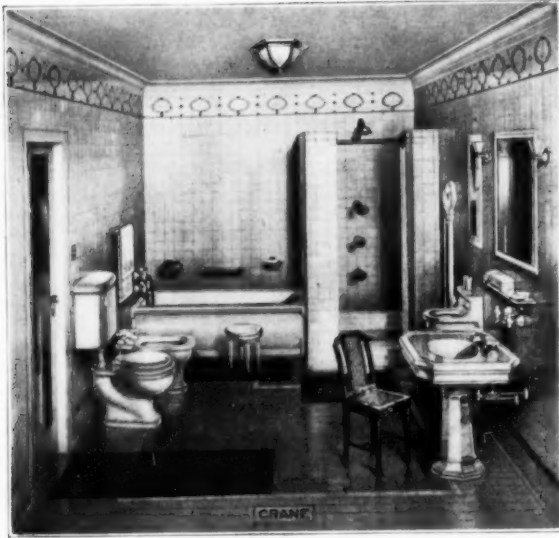
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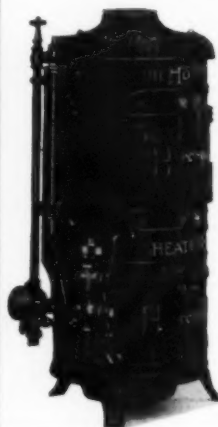
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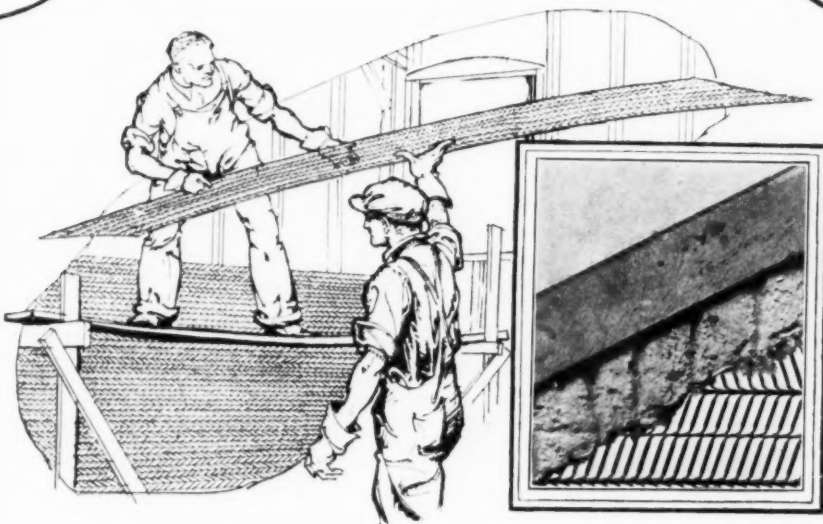
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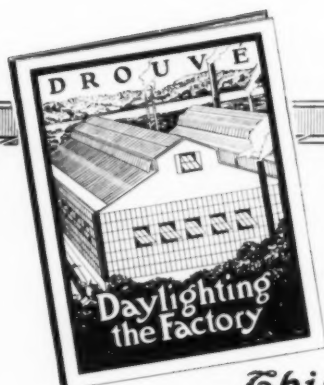
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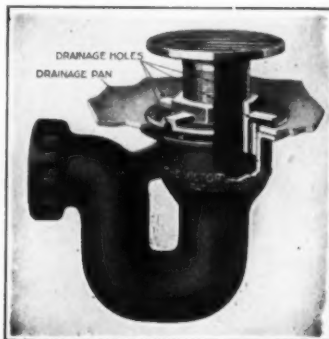
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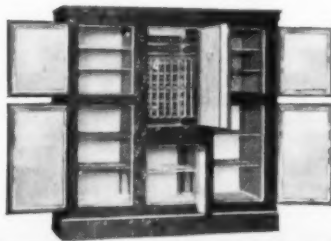
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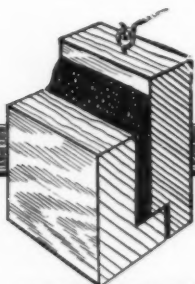
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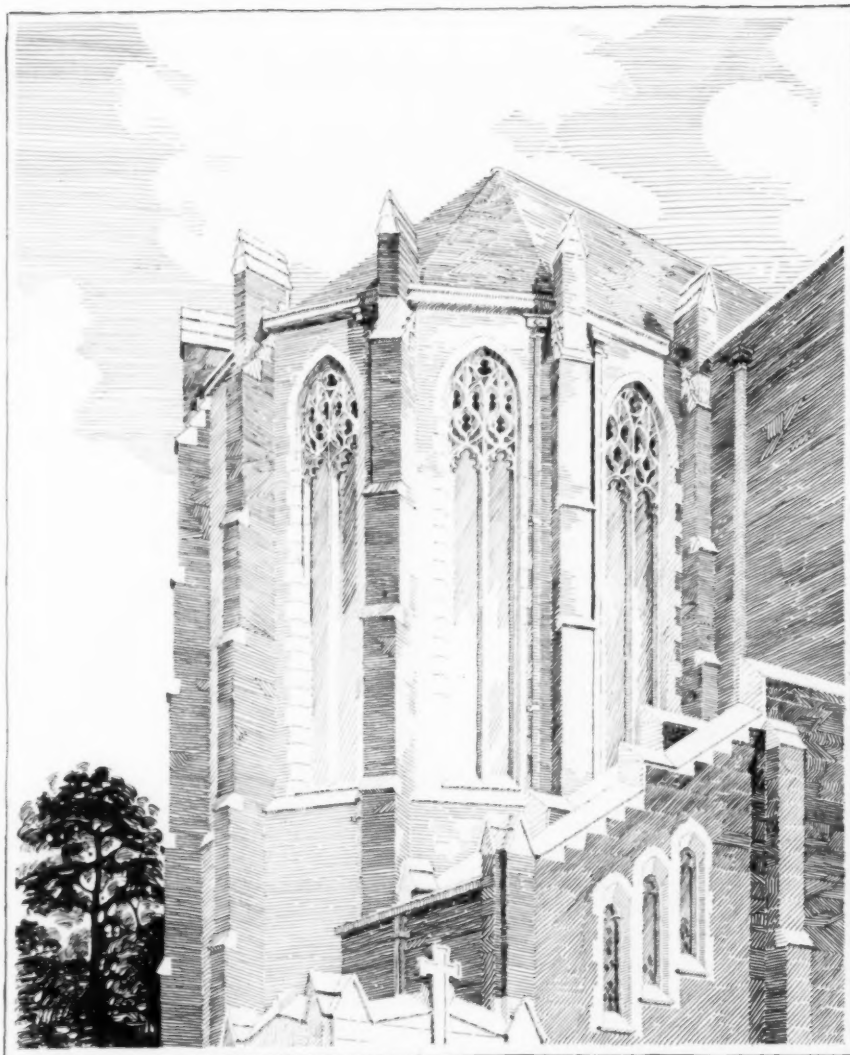


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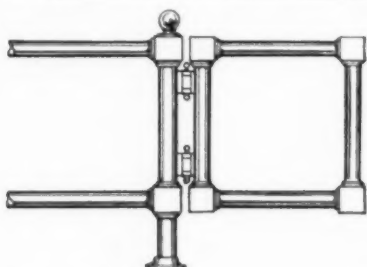
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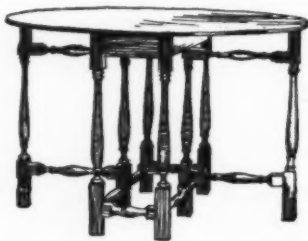
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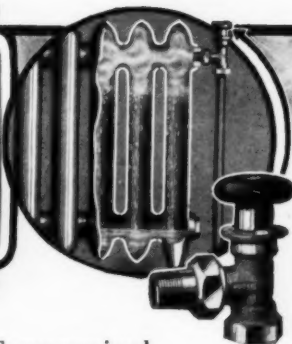


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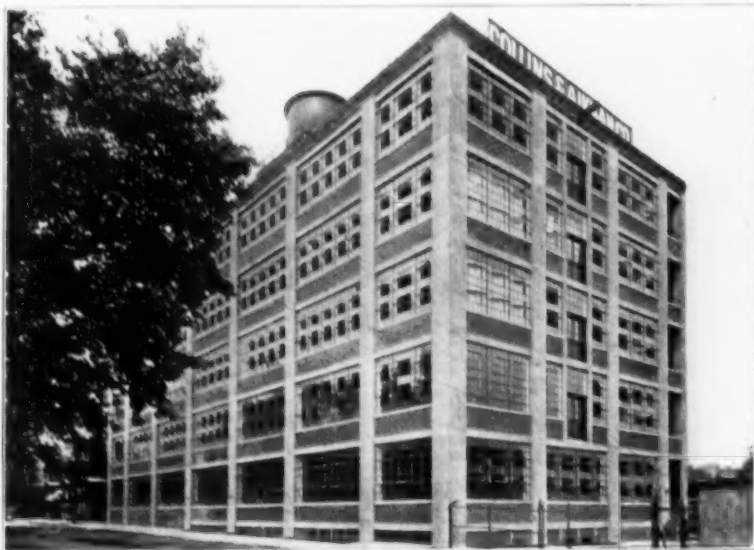
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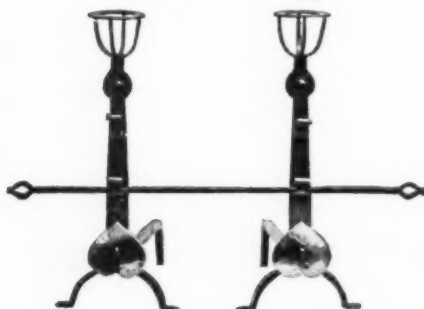
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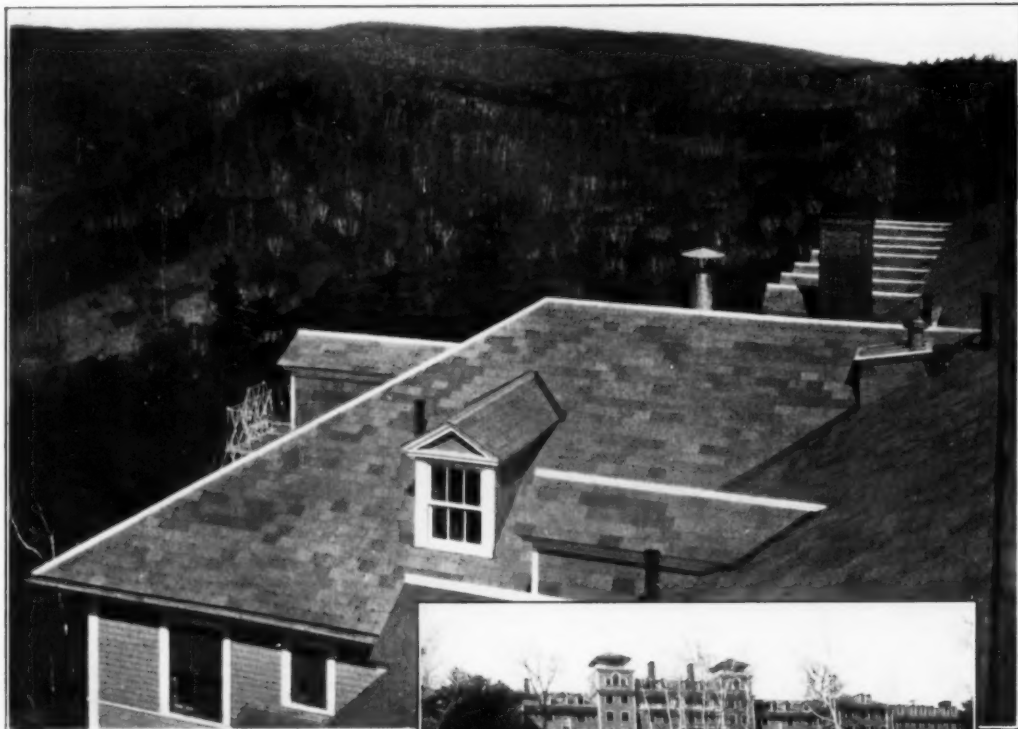


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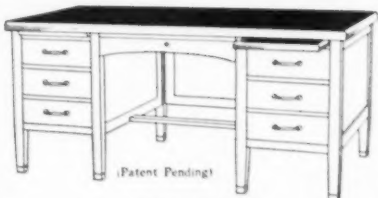
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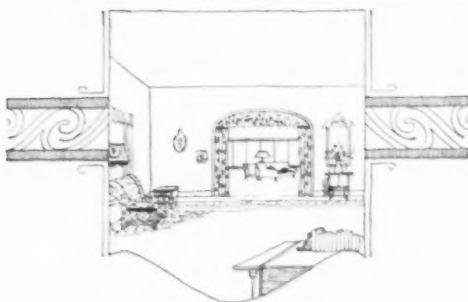
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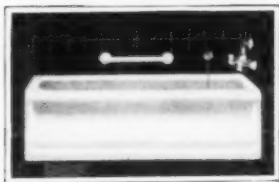
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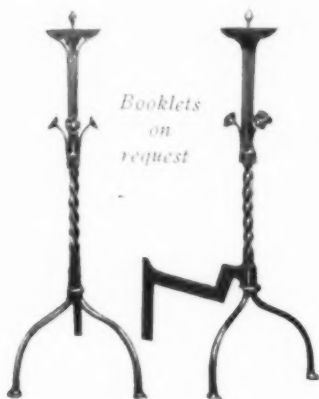
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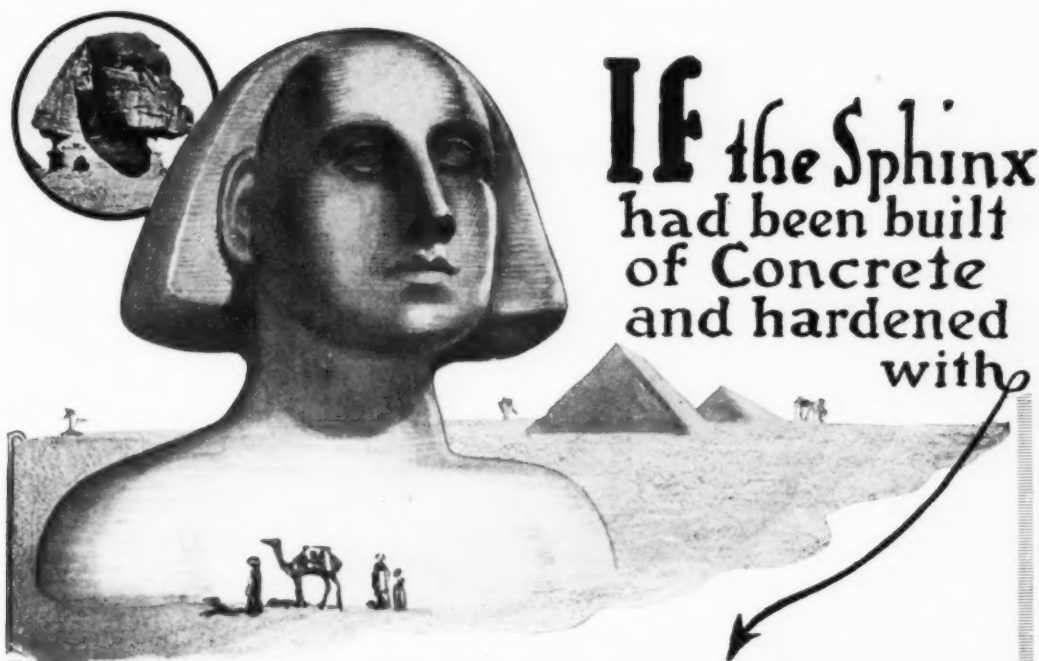
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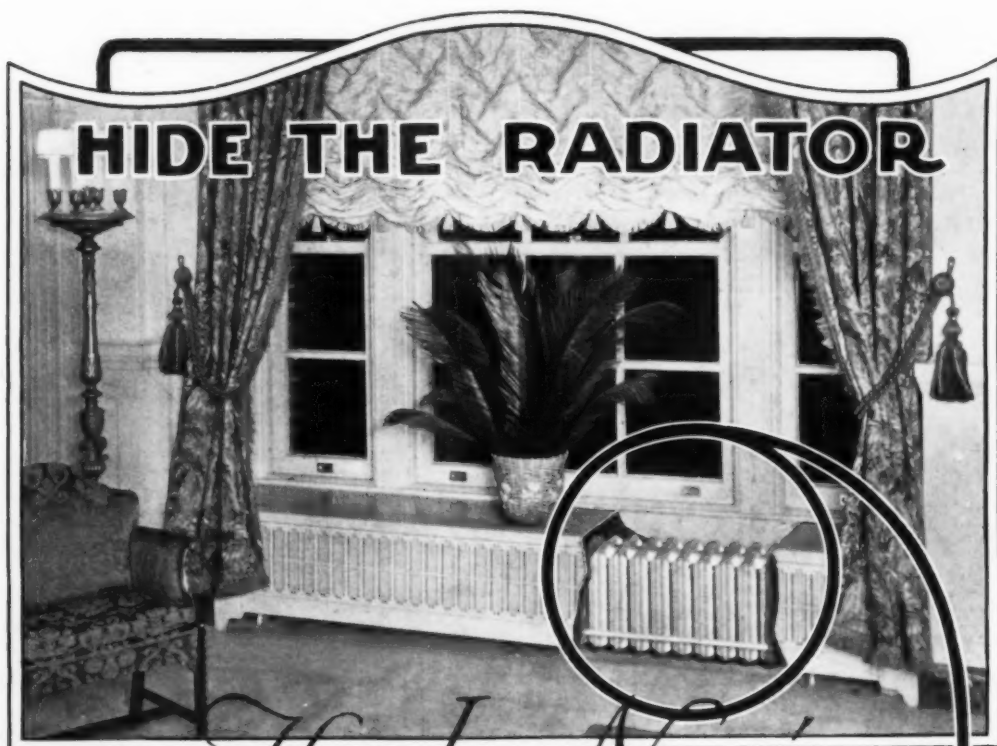
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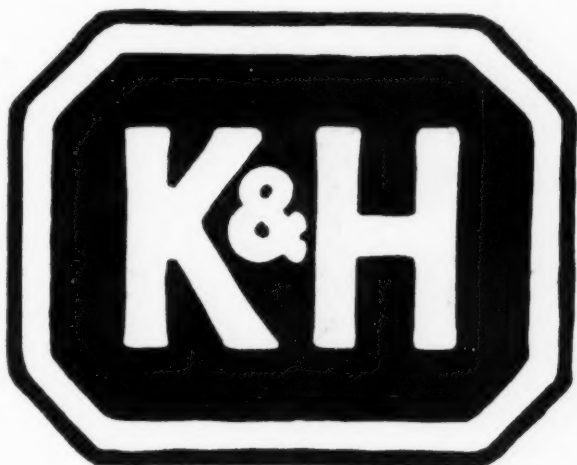
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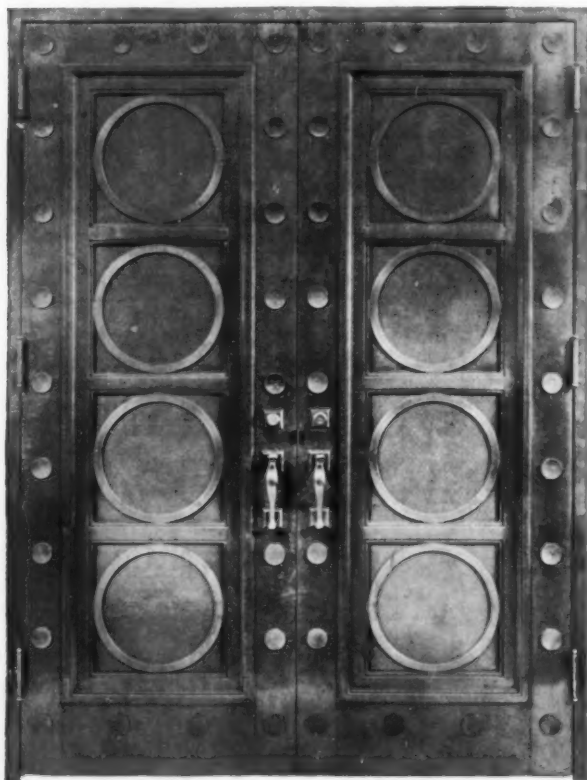
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